SAMSUNG

PDP-TELEVISION

Chassis : D74A(P_Europe_42HD)_Audi
Model : PS42Q7HX/XEH

SERVICE Manual

PDP-TELEVISION

FEATURES

- DTV Ready PDP TV
- Supreme Picture Quality
  Supreme Convenience Quality
- RF, HDMI, 2 Scart, PC (Analog),
  Component, Video, S-Video
- Slim line design
- Energy Saving

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1. Precaution

To avoid possible damages or electric shocks or exposure to radiation, follow the instructions below with regard to safety, installation, service and ESD.

1-1 Safety Precautions

1. Make sure all protective devices are properly installed including non-metallic handles and compartment covers when installing or re-installing the chassis or chassis assemblies.

2. Make sure that no gaps exist between the cabinets for children to insert their fingers in to prevent children from receiving electric shocks. Gaps mentioned above include ventilation holes of a too great magnitude between the PDP module and the cabinet mask, and the improper installation of the rear cabinet.

   Errors may occur when the resistance is below 1.0 ㏁ or over 5.2 ㏁.
   In these cases, make sure that the device is repaired before sending it back to the customer.

3. Check for Electricity Leakage (Figure 1-1)
   Warning: Do not use an insulated transformer for checking the leakage. Use only those current leakage testers or mirroring systems that comply with ANSIC 101.1 and the Underwriter Laboratory's specifications (UL1410, 59.7).

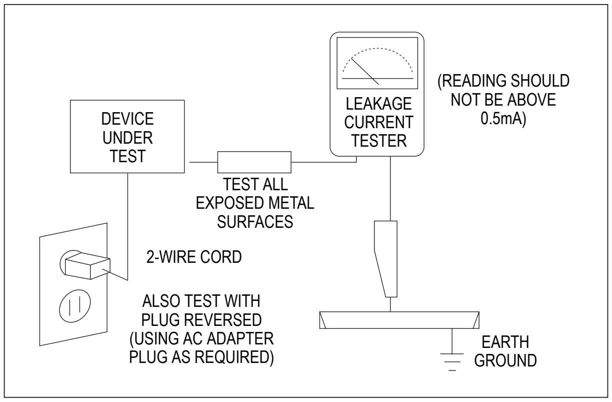

DEVICE UNDER TEST
LEAKAGE CURRENT TESTER
(READING SHOULD NOT BE ABOVE 0.5mA)
TEST ALL EXPOSED METAL SURFACES
2-WIRE CORD
ALSO TEST WITH PLUG REVERSED (USING AC ADAPTER PLUG AS REQUIRED)
EARTH GROUND

Fig. 1-1 AC Leakage Test

4. A high voltage is maintained within the specified limits using safety parts, calibration and tolerances. When voltage exceeds the specified limits, check each special part.

5. Warning for Engineering Changes:
   Never make any changes or additions to the circuit design or the internal part for this product.
   Ex: Do not add any audio or video accessory connectors. This might cause physical damage. Furthermore, any changes or additions to the original design/engineering will invalidate the warranty.

6. Warning - Hot Chassis:
   Some TV chassis are directly connected to one end of the AC power cord for electrical reasons.
   Without insulated transformers, the product can only be repaired safely when the chassis is connected to the earthed end of the AC power source.

   To make sure the AC power cord is properly connected, follow the instructions below. Use the voltmeter to measure the voltage between the chassis and the earthed ground. If the measurement is over 1.0V, unplug the AC power cord and change the polarity before re-inserting it. Measure the voltage between the chassis and the ground again.

7. Some TV chassis are shipped with an additional secondary grounding system. The secondary system is adjacent to the AC power line. These two grounding systems are separated in the circuit using an unbreakable/unchangeable insulation material.

8. When any parts, material or wiring appear overheated or damaged, replace them with new regular ones immediately. When any damage or overheating is detected, correct this immediately and make a regular check of possible errors.

9. Check for the original shape of the lead, especially that of the antenna wiring, any sharp edges, the AC power and the high voltage power. Carefully check if the wiring is too tight, incorrectly placed or loose. Never change the space between the part and the printed circuit board. Check the AC power cord for possible damages. Keep the part or the lead away from any heat-emitting materials.

10. Safety Indication:
    Some electrical circuits or device related materials require special attention to their safety features, which cannot be viewed by the naked eye. If an original part is replaced with another irregular one, the safety or protective features will be lost even if the new one has a higher voltage or more watts.

    Critical safety parts should be bracketed with (⚡ ⚠). Use only regular parts for replacements (in particular, flame resistance and dielectric strength specifications). Irregular parts or materials may cause electric shock or fire.

1-2 Servicing Precautions

Warning 1: First carefully read the "Safety Instruction" in this service manual.
When there is a conflict between the service and the safety instructions, follow the safety instruction at all times.

Warning 2: Any electrolytic capacitor with the wrong polarity will explode.

1. The service instructions are printed on the cabinet, and should be followed by any service personnel.

2. Make sure to unplug the AC power cord from the power source before starting any repairs.
   (a) Remove or re-install parts or assemblies.
   (b) Disconnect the electric plug or connector, if any.
   (c) Connect the test part in parallel with the electrolytic capacitor.

3. Some parts are placed at a higher position than the printed board. Insulated tubes or tapes are used for this purpose. The internal wiring is clamped using buckles to avoid contact with heat emitting parts. These parts are installed back to their original position.

4. After the repair, make sure to check if the screws, parts or cables are properly installed. Make sure no damage is caused to the repaired part and its surroundings.

5. Check for insulation between the blade of the AC plug and that of any conductive materials (i.e. the metal panel, input terminal, earphone jack, etc).

6. Insulation Check Process: Unplug the power cord from the AC source and turn the switch on. Connect the insulating resistance meter (500v) to the AC plug blade.

   The insulating resistance between the blade of the AC plug and that of the conductive material should be more than 1 MΩ.

7. Any B+ interlock should not be damaged.
   If the metal heat sink is not properly installed, no connection to the AC power should be made.

8. Make sure the grounding lead of the tester is connected to the chassis ground before connecting to the positive lead. The ground lead of the tester should be removed last.

9. Beware of risks of any current leakage coming into contact with the high-capacity capacitor.

10. The sharp edges of the metal material may cause physical damage, so ensure wearing protective gloves during the repair.

11. Due to the nature of plasma display panels, partial after-images may appear if a still picture is displayed on the screen for a long period of time.
    This is caused by brightness deterioration due to the storage effect of the panel, and to prevent this from happening, we recommend that the brightness and contrast are reduced.
    (e.g.) Contrast: 25, Brightness: 50

1-3 Static Electricity Precautions

1. Some semi-conductive ("solid state") devices are vulnerable to static electricity. These devices are known as ESD. ESD includes the integrated circuit and the field effect transistor. To avoid any materials damage from electrostatic shock, follow the instructions described below.

2. Remove any static electricity from your body by connecting the earth ground before handling any semi-conductive parts or ass'ys. Alternatively, wear a dischargeable wrist-belt.
   (Make sure to remove any static electricity before connecting the power source - this is a safety instruction for avoiding electric shock)

3. Remove the ESD ass'y and place it on a conductive surface such as aluminum foil to prevent accumulating static electricity.

4. Do not use any Freon-based chemicals.
   Such chemicals will generate static electricity that causes damage to the ESD.

5. Use only grounded-tip irons for soldering purposes.

6. Use only anti-static solder removal devices.
   Most solder removal devices do not support an anti-static feature. A solder removal device without an anti-static feature can store enough static electricity to cause damage to the ESD.

7. Do not remove the ESD from the protective box until the replacement is ready. Most ESD replacements are covered with lead, which will cause a short to the entire unit due to the conductive foam, aluminum foil or other conductive materials.

8. Remove the protective material from the ESD replacement lead immediately after connecting it to the chassis or circuit ass'y.

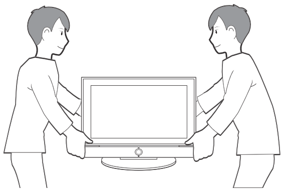
9. Take extreme caution in handling any uncovered ESD replacements. Actions such as brushing clothes or lifting your leg from the carpet floor can generate enough static electricity to damage the ESD.

CAUTION

These servicing instructions are for use by qualified service personnel only.
To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

1-4 Installation Precautions

1. For safety reasons, more than two people are required for carrying the product.



2. Keep the power cord away from any heat emitting devices, as a melted covering may cause fire or electric shock.
3. Do not place the product in areas with poor ventilation such as a bookshelf or closet. The increased internal temperature may cause fire.
4. Bend the external antenna cable when connecting it to the product. This is a measure to protect it from being exposed to moisture. Otherwise, it may cause a fire or electric shock.
5. Make sure to turn the power off and unplug the power cord from the outlet before repositioning the product. Also check the antenna cable or the external connectors if they are fully unplugged. Damage to the cord may cause fire or electric shock.
6. Keep the antenna far away from any high-voltage cables and install it firmly. Contact with the high-voltage cable or the antenna falling over may cause fire or electric shock.
7. When connecting the RF antenna, check for a DTV receiving system and install a separate DTV reception antenna for areas with no DTV signal.
8. When installing the product, leave enough space (4") between the product and the wall for ventilation purposes.
   A rise in temperature within the product may cause fire.
9. When moving a PDP with removable speakers, detach the speakers first before moving the main body.
   Moving the PDP main body without separating the speakers may cause the speakers to detach, possibly causing damage or injury.

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2. Product Specification

2-1 Product Features

Block	Specfication	Major IC	Remark
RF	Tuner	TCLW3001PD32S(H)	SEMCO
Power	Input Voltage : AC 220 - 240 V~, 50 Hz		
Video	Scaler	SVP-PX	TRIDENT
	Video Decoder		
Sound	Sound Processor	STV8257DSX	ST Microelectronics
	Sound AMP	STA323W	ST Microelectronics
	Audio S/W	MM74HC4052	
PDP Module	Samsung SDI V5.1	42"HD	SAMSUNG SDI
Remocon	TM87B		
Cabinet	Q7		

■ Chip Description

- SVP-PX (IC611) : SVPTMPX contains dual-purposed triple 10-bit high-precision and high speed video ADCs for both PC and video inputs, the high speed HDMI could support all HDMI inputs up to 135MHz with HDCP format, the high-performance multi-format 3D digital comb video decoder that supports NTSC, PAL, and SECAM*, a HDTV sync separator, motion adaptive de-interlacing engine, and the video format conversion engine, supporting multi-window display in many different output modes.
- STV8257DSX (IC503) : Digital Audio Decoder/Processor
- STA323W (IC505) : Audio power amplifiers

2-2 Key Features

Model	PS-42Q7H
Screen Size	107 Cm / 42 Inches (16:9)
Dimensions	1055(W) x 340(D) x 756.5(H) mm
Weight	40.0 Kg
Voltage	EU : AC 220-240V~, 50Hz CIS : AC 100-240V~, 50/60Hz
Colour System	PAL, SECAM, NT3.58, NT4.43
Sound System	BG, DK, I, L
Number of Pixels	1024(H) X 768(V)
ANTENNA input	VHF, UHF (75Ω unbalanced)
VIDEO input	SCART1, SCART2 AV (Side), S-VIDEO (Side) COMPONENT IN (480i/P, 576i/P, 720P, 1080i) PC IN (MINI D-SUB 15P) HDMI/DVI IN
AUDIO input	SCART1, SCART2 AV (Side), S-VIDEO (Side) Component PC DVI
Audio Output	AUDIO OUT Headphone (Side)
Speaker Output	10W + 10W (8Ω)

■ H/W Configuration
- Video : SVP-PX
- Sound : STA8257DSX, STA323W
- Tuner : TCLW3001PD32S (H)

■ S/W Configuration
- Main Micom : M30840SGP (IC202)
- Sub Micom : 3F866BXZZ (IC207)

■ Picture
- System : Video → PAL/SECAM/NTSC4.43, Sound → Analog
- Progressive
- Output resolution : 1024*768
- OSD : Smart user Interface
- Picture Enhancement : FBE
- Still picture, Noise reduction
- Comb Filter : 3D comb filter
- PIP : Large
- Panorama : Wide

■ Sound
- System : Stereo
- Output : 10W + 10W
- Speaker : built-in

■ Feature
- Component Interface (480i/480p/576i/576p/720p/1080i, Y/Pb/Pr)
- Digital Interface : HDMI
- Picture Size : Auto Wide/16:9/Wide4:3/Zoom/4:3
- Auto Store
- Sleep Timer : 180 minute
- Clock
- Zoom, Previous channel, Blue Screen, Color Tone, Screen Burn Protection

■ Remocon
- TM86

■ Power Supply
- EU : AC 220-240V, 50Hz
- CIS : AC 100-240V~, 50/60Hz

■ Power Consumption
- Max Power : 360 W

■ Both screen position and size will vary depending on the type of PC monitor and its resolution.
The table below shows all of the display modes that are supported. (N : Negative, P : Positive)

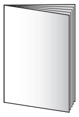
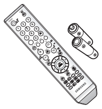
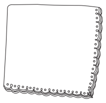
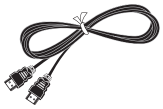
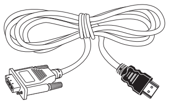
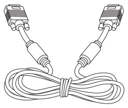
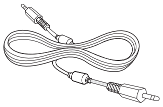
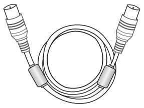
Video Signal	Resolution (Dot X Line)	Vertical frequency (Hz)	Horizontal frequency (kHz)	Vertical polarity	Horizontal polarity
IBM PC / AT Compatible	640 X 350	70.086	31.469	P	N
	720 X 400	70.087	31.469	N	P
	640 X 480	59.940	31.469	N	N
		70.000	35.000	N/P	N/P
		72.809	37.861	N	N
		75.000	37.500	N	N
	800 X 600	56.250	35.156	N/P	N/P
		60.317	37.879	P	P
		70.000	43.750	N/P	N/P
		72.188	48.077	P	P
		75.000	46.875	P	P
	848 X 480	60.000	31.020	P	P
		74.769	37.684	P	N
	1024 X 768	60.004	48.363	N	N
		70.069	56.476	N	N
		72.000	57.672	N/P	N/P
		75.029	60.023	P	P

▶ The interlace mode is not supported.
▶ The television might operate abnormally if a non-standard video format is selected.
▶ 480i/p, 576i/p, 720p, or 1080i is not available in pc mode.
▶ The PC text quality is optimum in XGA mode (1024 x 768@60Hz).

2-3 Specifications Analysis

Model		PS-42Q7H (Audi-42HD)	Puccini(V4)
Design			
Basic	Display Type	PDP TV	PDP TV
	Built-In Tuner	O	O
	Resolution	1024 x 768	1024 x 768
	PDP Module	V5.1	V4
	Screen Size	42 inches	42 inches
	Aspect Ratio	16 : 9	16 : 9
	Power Consumption	360 W	380 W
	Dimensions	1055(W) x 340(D) x 756.5(H) mm	1050(W) x 86(D) x 755(H) mm
	Weight	40.0 Kg	59.2 Kg
Picture	Brightness	1,100 Cd/m2	1,300 Cd/m2
	Contrast Ratio	5000:1	10,000 : 1
	Image Enhacer	FBE	DNIe-L
Audio	Equalizer	O	O
	Auto Volume	O	O
	Surround Sound	SRS TruSurround	SRS TruSurround
	Speaker Output	10 W + 10 W	15 W + 15 W
	Speaker	Included	Included
Features	PIP	O	O
	Double Screen	X	O
	TTX	O	O
	Still Image	O	O
	My Color Control	X	O
	Color Weakness	X	O
	Energy Saving	O	O
	Screen Burn Protection	O	O
Connections	Antenna	1 Input	1Input
	CVBS	1 AV	1AV
	S-Video	1 Input	1 Input
	Component(Y/PB/PR)	1 Input	1 Input
	PC(D-SUB)	1 Input	1 Input
	DVI	X	X
	HDMI	1 Input	1 Input
	Sub Woofer	X	X
	Optical	X	X
	Coaxial	X	X

2-4 Accessories

Accessories		Item	Item code	Remark
Supplied Accessories		User Manual	BN68-01022J	Samsung Service center
		Remote Control AAA Batteries	BN59-00539A 4301-000103	
		Power Cord	3903-000145	
		Cloth Clean	BN63-01798A	
Accessories that can be purchased additionally		S-VIDEO Cable	-	Internal shopping mall
		HDMI Cable	-	
		HDMI/DVI cable	-	
		Component Cables (RCA)	-	
		PC Cable	-	
		PC Audio Cable	-	
		Scart Cable	-	
		Antenna Cable	-	

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3. Alignment & Adjustment

3-1 Service Instruction

■ Before Performing After Sales Services

1. Check if the measurement and test equipment is working properly.
2. Secure sufficient work space for disassembling the product.
3. Prepare a soft pad for disassembling the product.

3-2 How to Access Service Mode

1. General Remote

To Enter : Power Off → INFO → MENU → MUTE → Power On
(Interval between key strokes : less than 3 sec)
To Exit : Power Off → ON

2. Factory Remote

To Enter : Power On → INFO → FACTORY Key (Interval between key strokes : less than 3 sec)
To Exit : Power Off → On
Press the Factory key twice with a key stroke interval of more than 1 second (Pressing once enters Aging Mode)

3. Settings when entering Factory mode

- Sharp Screen (Dynamic), Color Tone (Cool1), Factory (Dynamic CE Off)

4. Adjustment Procedures

- Channel ▲▼ Key : Select an item.
- Volume ◀▶ Key : Adjust the value up or down.
- MENU Key : Save the changes to the EEPROM and return to the higher-level mode.
- Using the Numeric (0~9) keys, you can select a channel.
- Using the SOURCE key, you can switch AV modes.

5. Initial SERVICE MODE DISPLAY State

1. Calibration
2. Option Table XXXX XXXX
3. White Balance
4. SVP-FX
5. Option Block
6. STV8257/STA323W
7. YC Delay
8. Adjust
9. -----
10. W/B MOVIE
11. Checksum
12. Reset
13. -----

T-AUD42PEUH-XXXX (Main Micom Ver)
T-AUD42PEUHS-XXXX (Sub Micom Ver)
Month / Day / Year / Hour / Min. / Sec.

※ The version of the firmware displayed at the bottom of the screen may differ and the firmware is subject to change for the improvement of product functions.

※ If you have adjusted the settings in Service Mode, you have to reset the product.

3-3 Factory Data

★ The underlined are items applied during the service adjustment. None of the others should be adjusted.

1. Calibration
2. Option Table XXXX XXXX
3. White Balance
4. SVP-FX
5. Option Block
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7. YC Delay
8. Adjust
9. -----
10. W/B MOVIE
11. Checksum
12. Reset
13. -----
    T-AUD42PEUH-XXXX (Main Micom Ver)
    T-AUD42PEUHS-XXXX (Sub Micom Ver)
    Month / Day / Year / Hour / Min. / Sec.

1. Calibration : W/B Calibration

AV Calibration
DTV Calibration
PC Calibration
HDMI Calibration

2. Option Table : Setting option

Blue Eye : OFF
Gamma : OFF
Logic D/L : OFF
Auto Power : ON
Dynamic CE : OFF
EnergySave : OFF
LBE/FBE : ON
FRC-Micronas : OFF
FRC-Samsung : OFF
LNA : OFF
Carrier Mute : ON
Language : English
Auto FM : ON
High Deviation : OFF
TTX : ON
TTX List : Flof
Dynamic AslGain : OFF
Tuner TOP : 8
TTX Group : Auto
TTX Level : L1.5
PS Test : MIN
LED OnTime : 10
LED OffTime : 0
Debug : Smart
Ch. Table : SUWON
iDTV Country : UK
ACR : OFF

3. White Balance : Adjustment White Balance
(Range 0~255)

Sub Bright : 128
R off set : 128
G off set : 128
B off set : 128
Sub contrast : 128
R gain : 128
G gain : 128
B gain : 128

1. Calibration
2. Option Table XXXX XXXX
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5. Option Block
6. STV8257/STA323W
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13. -----
   T-AUD42PEUH-XXXX (Main Micom Ver)
   T-AUD42PEUHS-XXXX (Sub Micom Ver)
   Month / Day / Year / Hour / Min. / Sec.

→

4. SVP-PX : SVP-PX Correct Register

ComB Filter : Y-Filter - 80H

Sharpness :	RF/AV	COMP	PC	HDMI
H2Gain	0DH	10H	10H	08H
H4Gain	04H	04H	04H	00H
V2Gain	0CH	10H	10H	08H
V4Gain	04H	04H	04H	04H
Sr2Gain	00H	00H	00H	00H
Sr4Gain	00H	00H	00H	00H
Sl2Gain	00H	00H	00H	00H
Sl4Gain	00H	00H	00H	00H
Peakth1	00H	00H	00H	00H
Peakth2	80H	80H	80H	80H
Peakth3	00H	00H	00H	00H

NR :	
YNROFF	80H
CNROFF	80H
YNRON	80H
CNRON	80H

RGB Calibration :	RF/AV	COMP	PC	HDMI
R-Offset	4EH	4BH	48H	3BH
G-Offset	4EH	4BH	48H	3BH
B-Offset	4EH	4BH	48H	3BH
R-Gain	7CH	7BH	80H	9DH
G-Gain	7CH	7BH	80H	9DH
B-Gain	7CH	7BH	80H	9DH

ADC Calibration :	RF/AV	COMP	PC	HDMI
TCD3 Contrast	84H	78H	78H	78H
TCD3 Brightness	23H	20H	20H	20H
TCD3 CR	80H	80H	80H	80H
TCD3 CB	80H	80H	80H	80H
TCD3 Delay	00H	00H	00H	00H
Analog Y Offset	40H	40H	42H	40H
Analog PB Offset	80H	80H	39H	80H
Analog PR Offset	80H	80H	39H	80H
Analog Y Gain	D6H	CBH	CFH	D6H
Analog PB Gain	FEH	9AH	80H	FEH
Analog PR Gain	FEH	9AH	80H	FEH
Black Level	00H	00H	00H	00H
SVP Brightness	00H	00H	00H	00H

Calibration Target :	low	high	delta
AV ADC	10H	F8H	04H
COMP ADC	10H	F8H	04H
PC ADC	04H	F8H	04H
ALL RGB	04H	F8H	10H

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12. Reset
13. -----

T-AUD42PEUH-XXXX (Main Micom Ver)
T-AUD42PEUHS-XXXX (Sub Micom Ver)
Month / Day / Year / Hour / Min. / Sec.

5. Option Block

FRC-Micronas
FRC-Samsung

LBE/FBE	: Test Pattern	00H
	Black Stretch Tilt	50H
	Black Stretch Gain	55H
	Black Stretch Ratio	33H
	Skin En	01H
	Skin Gain	80H
	Skin T X	70H
	Skin T Y	64H
	White En	00H
	MCM Gain	80H
	White T X	4FH
	White T Y	54H
	CHY Gain1	3EH
	CHY Gain2	42H
	CHC Gain1	40H
	CHC Gain2	40H
	CHM Gain1	3DH
	CHM Gain2	45H
	ColorGain TY	00H
	ColorGain TC	00H
	ColorGain TM	00H
	Color Gain	80H
	Input RGB Gain	80H
	Input RGB Offset	00H

6. STV8257/STA323W : Sound IC Correct Register

Ch1 Volume : 55H
Ch2 Volume : 55H
AGC Gain : 07H
AM Prescale : 00H
ZWT TH : 0AH
AV Delay : 55H
Comp Delay : 32H
HDMI Delay : 32H
PC Delay : 32H
L1 Att/Rel Th : EFH

1. Calibration
2. Option Table XXXX XXXX
3. White Balance
4. SVP-FX
5. Option Block
6. STV8257/STA323W
7. YC Delay
8. Adjust
9. -----
10. W/B MOVIE
11. Checksum
12. Reset
13. -----

T-AUD42PEUH-XXXX (Main Micom Ver)
T-AUD42PEUHS-XXXX (Sub Micom Ver)
Month / Day / Year / Hour / Min. / Sec.

7. YC Delay

PAL B/G : 99H
PAK D/K : 88H
PAL I : 88H
SECAM B/G : 88H
SECAM D/K : 77H
SECAM L/L' : 66H
NTSC 3.58 : 96H
NTSC 4.43 : CCH
AV PAL : A9H
AV SECAM : 66H
AV NT3.58 : 98H
AV NT4.43 : CCH
AV PAL60 : 77H

8. Adjust

V Mute Time : 10
Melody Volume : 9
Ana_Dimm_Max : FEH
TTX Contrast : 50
TTX Brightness : 50
TTX Color : 50
Dynamic Contrast : 100
Dynamic Sharpness : 60
Standard Contrast : 90
Standard Brightness : 80
Standard Color : 70
Standard Sharpness : 70
Movie Contrast : 60
Movie Brightness : 50
Movie Color : 50
Movie Sharpness : 40

LNA PLUS : RFDB-1 Level 2
RFDB-2 Level 5
RFDB-3 Level 9
RFDB-4 Level 24

Hotel Option : Hotel Mode OFF
PWR On CH 1
PWR On Vol. 10
Max Volume 100
L.Key Lock OFF
PWR On Src RF

9. -----

1. Calibration
2. Option Table XXXX XXXX
3. White Balance
4. SVP-FX
5. Option Block
6. STV8257/STA323W
7. YC Delay
8. Adjust
9. -----
10. W/B MOVIE
11. Checksum
12. Reset
13. -----

T-AUD42PEUH-XXXX (Main Micom Ver)
T-AUD42PEUHS-XXXX (Sub Micom Ver)
Month / Day / Year / Hour / Min. / Sec.

10. W/B MOVIE

	RF/AV	COMP	PC	HDMI
WB Movie	OFF	OFF	OFF	OFF
Color Mode	Movie	Movie	Movie	Movie
Color Tone	Warm2	Warm2	Warm2	Warm2
W1 R Gain	130	129	130	134
W1 B Gain	117	118	119	120
W1 R Offset	138	137	138	138
W1 B Offset	119	114	115	122
W2 R Gain	132	133	134	136
W2 B Gain	115	114	115	116
W2 R Offset	141	140	141	141
W2 B Offset	115	112	113	116
Movie Contrast	70	70	70	70
Movie Brightness	50	50	50	50
Movie Color	45	45	45	45
Movie Sharpness	25	25	25	25

11. Checksum

12. Reset

13. -----

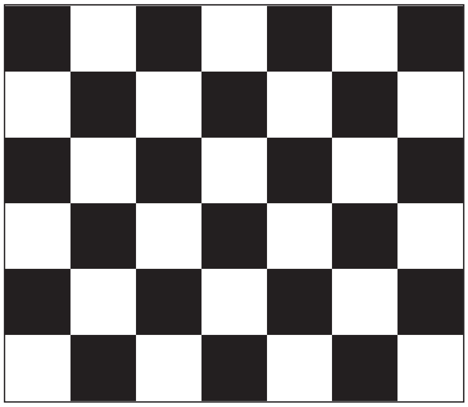
3-4 Service Adjustment

3-4-1 White Balance - Calibration

If picture color is wrong, do calibration first.

Execute calibration in Factory Mode
1. Source : VIDEO
2. Setting Mode : PAL Video (MODE : #2)
3. Pattern : Pattern #24 (Chess Pattern)
4. Use Equipment : K-7256 or Equipment of equality level
5. Work order
   1) Enter by Factory Mode select "1.CALIBRATION".
   2) Select "AV CALIBRATION" again in CALIBRAION MENU.
   3) After Completing Calibration, come out "Av success". OSD on the screen (bottom-side) for about 3 seconds.

Source AV : PAL composite, Component : 1280*720/60Hz
PC : 1024*768/60Hz



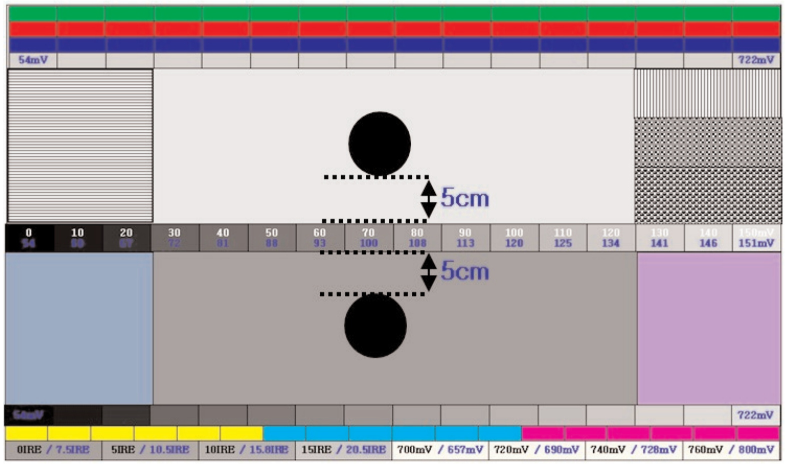
(Chess Pattern)

3-4-2 White Balance - Adjustment

If picture color is wrong, check White Balance condition.

Equipment : CA210, Patten : Toshiba
Adjust W/B in Factory Mode

Sub brightness and R/G/B Offset controls low light region
Sub contrast and R/G/B Gain controls high light region
Source AV : PAL composite, Component : 1280*720/60Hz,
HDMI[DVI] : 1280*720/60Hz


54mV
722mV
5cm
0
10
20
30
40
50
60
93
70
100
80
108
90
113
100
120
110
125
120
134
130
141
140
146
150mV
151mV
5cm
54mV
722mV
0IRE / 7.5IRE
5IRE / 10.5IRE
10IRE / 15.8IRE
15IRE / 20.5IRE
700mV / 657mV
720mV / 690mV
740mV / 728mV
760mV / 800mV

(SAMSUNG WHITE BALANCE Adjustment PATTERN with FPD)

[Test Pattern : MSPG-945 Series Pattern #16]

* Color temperature
  1500K +/-500, -6 ~-20 MPCD

* Color coordinate
  H/L : 270/280 +/- 2
  L/L : 270/280 +/- 3, 2.1 Ft +/-0.05 Ft

3-4-3 Conditions for Measurement

1. On the basis of toshiba ABL pattern : High Light level (57 IRE)
   - INPUT SIGNAL GENERATOR : MSPG-925LTH
   * Mode No 2 : 744X484@60 Hz
     No 6 : 1280X720@60 Hz
     No 21 : 1024X768@60 Hz
   * Pattern No 36 : 16 Color Pattern
     No 16 : Toshiba ABL Pattern

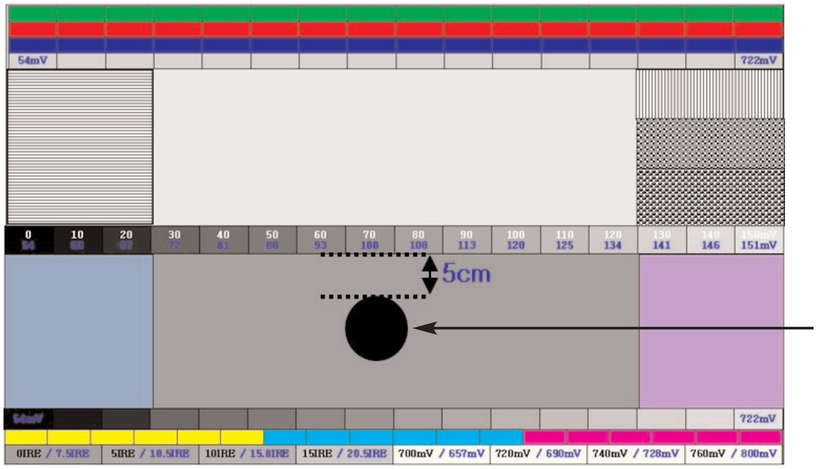
2. Optical measuring device : CA210 (FL)
   Please use the MSPG-925 LTH generator for model PS-42E7H / PS-42E7HD / PS-42C7H / PS-42Q7H.

3-4-4 Method of Adjustment

1. Adjust the white balance of AV, Component and DVI Modes.
   (AV → Component)
   a) Set the input to the mode in which the adjustment will be made (RF → DTV → PC → DVI).
      * Input signal - VIDEO Mode : Model #2 (744*484 Mode), Pattern #16
      - DTV, DVI Mode : Model #6 (1280*720 Mode), Pattern #16
      - HDMI Mode : Model #6 (1280*720 Mode), Pattern #16

   b) Enter factory color control, confirm the data.

   c) Adjust the low light. (Refer to table 1, 2 in adjustment position by mode)
      - Adjust sub - Brightness to set the 'Y' value.
      - Adjust red offset ('x') and blue offset ('y') to the color coordinates.

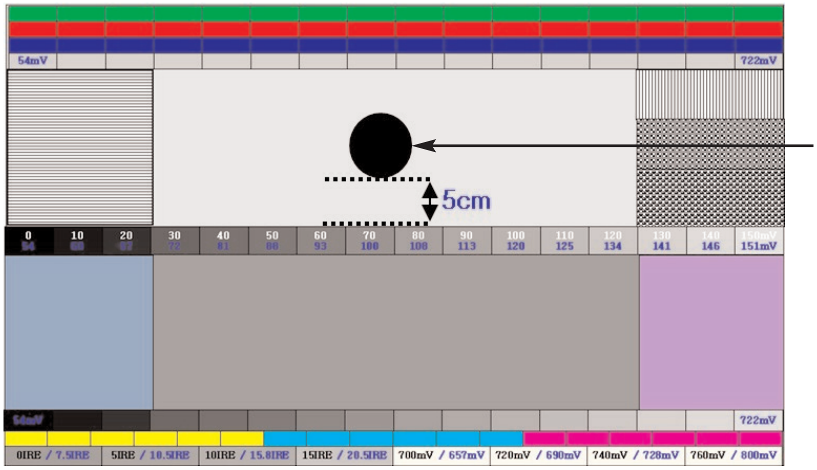

54mV
722mV
5cm
0IRE / 7.5IRE
5IRE / 10.5IRE
10IRE / 15.8IRE
15IRE / 20.5IRE
700mV / 657mV
720mV / 690mV
740mV / 728mV
760mV / 800mV

Low light
Measurement point

(SAMSUNG WHITE BALANCE Adjustment PATTERN with FPD)

* Do not adjust green offset data.

   d) Adjust the high light. (Refer to table 1, 2 in adjustment position by mode)
      - Adjust red gain ('x') and blue gain ('y') to the color coordinates.


54mV
722mV
5cm
0IRE / 7.5IRE
5IRE / 10.5IRE
10IRE / 15.8IRE
15IRE / 20.5IRE
700mV / 657mV
720mV / 690mV
740mV / 728mV
760mV / 800mV

Hight light
Measurement point

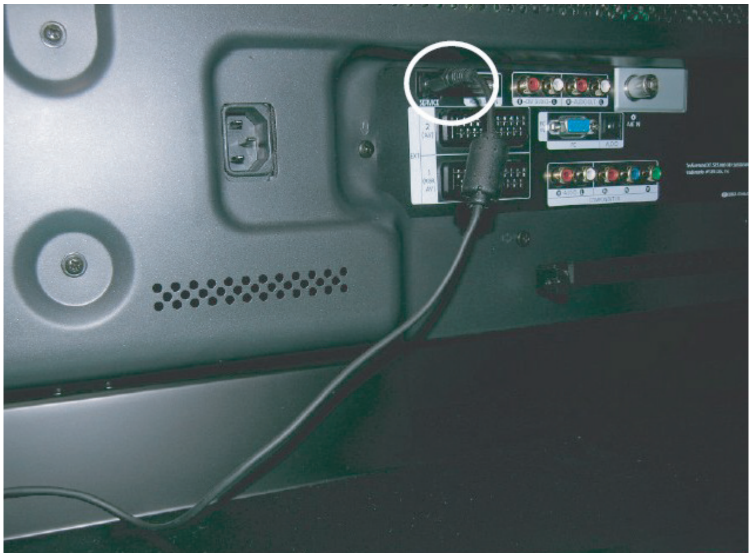
(SAMSUNG WHITE BALANCE Adjustment PATTERN with FPD)

* Do not adjust the green gain and sub-contrast (Y) data.

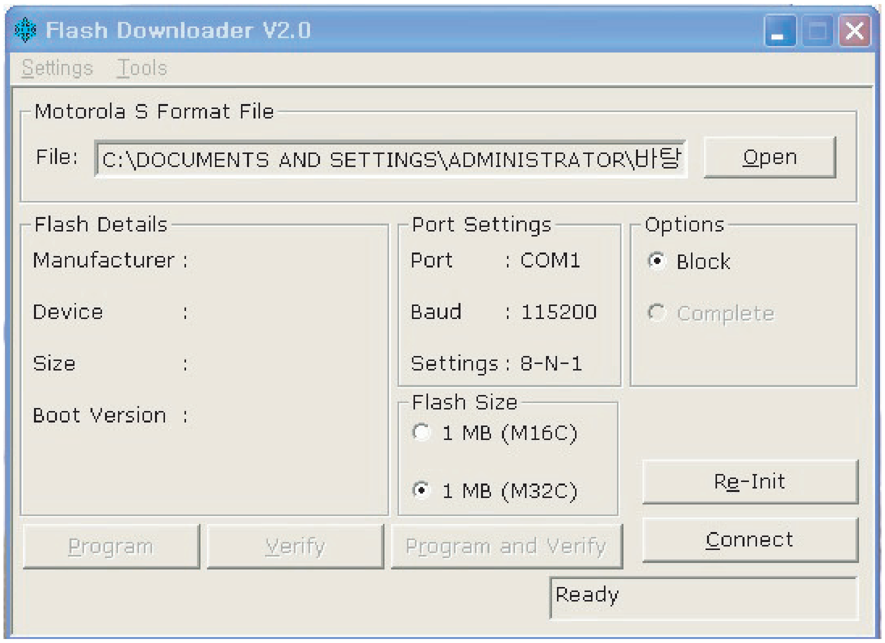
3-5 Software Upgrade

3-5-1 How to Update Flash ROM

1. Installthe Flash Downloader
   Connect Set (Service Jack) and Jig Cable to execute Program Update.



2. Flash Downloader program update
   - Before Turning on the set, Click "connect" which is under of OSD Screen.
   - Turn on the Set.


Flash Downloader V2.0
Settings
Tools
Open
Program
Verify
Program and Verify
Re-Init
Connect

Motorola S Format File

File: C:\DOCUMENTS AND SETTINGS\ADMINISTRATOR\바탕

Flash Details

Manufacturer :

Device :

Size :

Boot Version :

Port Settings

Port : COM1

Baud : 115200

Settings : 8-N-1

Options

● Block

○ Complete

Flash Size

○ 1 MB (M16C)

● 1 MB (M32C)

Ready

3-6 Replacements & Calibration

※ The ASS'Y code can be changed, see "5 Chapter. Electrical Part List."

* Check items listed after changing each

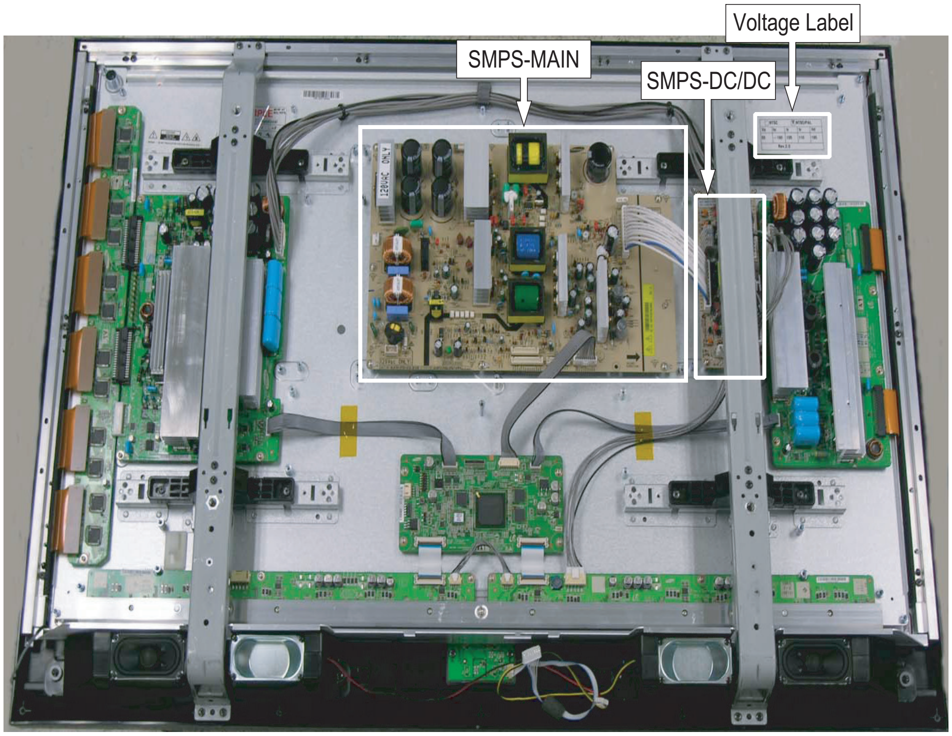
Replaced Items	Code No.	Check Items
ASSY PCB MISC-MAIN	BN94-00962B	1) Auto Program 2) Let the user go through subscription process after contacting user's cable service provider.
ASSY PCB P-SMPS(MAIN)	BN96-03052A	Vs, Va voltage check and adjust
ASSY PCB P-SMPS(DC DC)	BN96-01856A	Output voltage check and adjust
ASSY PDP P-LOGIC BOARD	BN96-03355A	Not adjustment
ASSY PDP P-X MAIN BOARD	BN96-03350A	
ASSY PDP P-Y MAIN BOARD	BN96-03351A	
ASSY PDP P-Y MAIN SCAN BOARD	BN96-03352A	
ASSY PDP P-ADDRESS E BUFF BOARD	BN96-03353A	
ASSY PDP P-ADDRESS F BUFF BOARD	BN96-03354A	

※ When replacing the SMPS or PDP panel, you have to check the voltage printed on the panel sticker and adjust it.

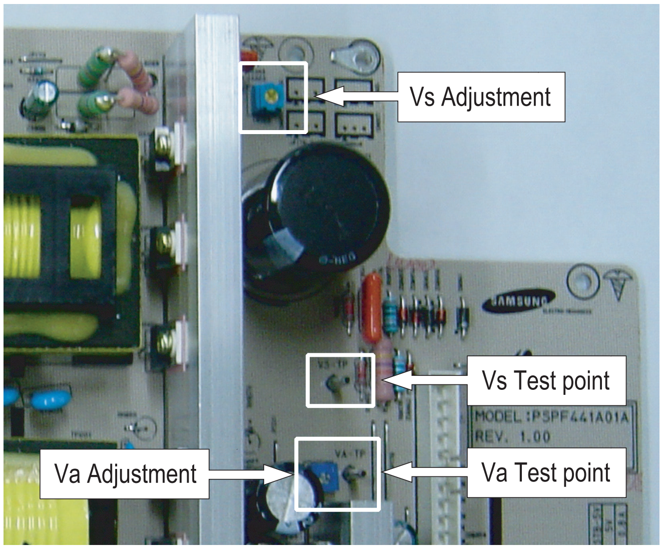
3-6-1 Voltage Adjustment

1. SMPS Panel voltages must be adjusted after changing SMPS-PCB or PDP module.

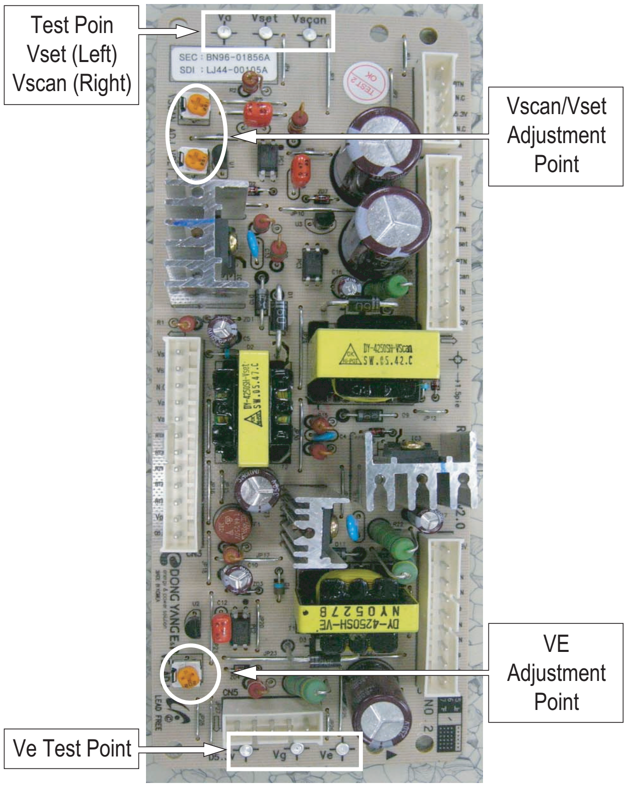
	Value	Board Adjustment
Vs	200	SMPS-MAIN
Va	65	
Vset	195	SMPS-DC/DC
Ve	120	
Vscan	-190	


Voltage Label
SMPS-MAIN
SMPS-DC/DC

2. A point of adjusting SMPS-MAIN voltage.


Vs Adjustment
SAMSUNG
Vs Test point
MODEL:P5PF441A01A
REV. 1.00
Va Adjustment
Va Test point

3. A point of adjusting SMPS-DC/DC.

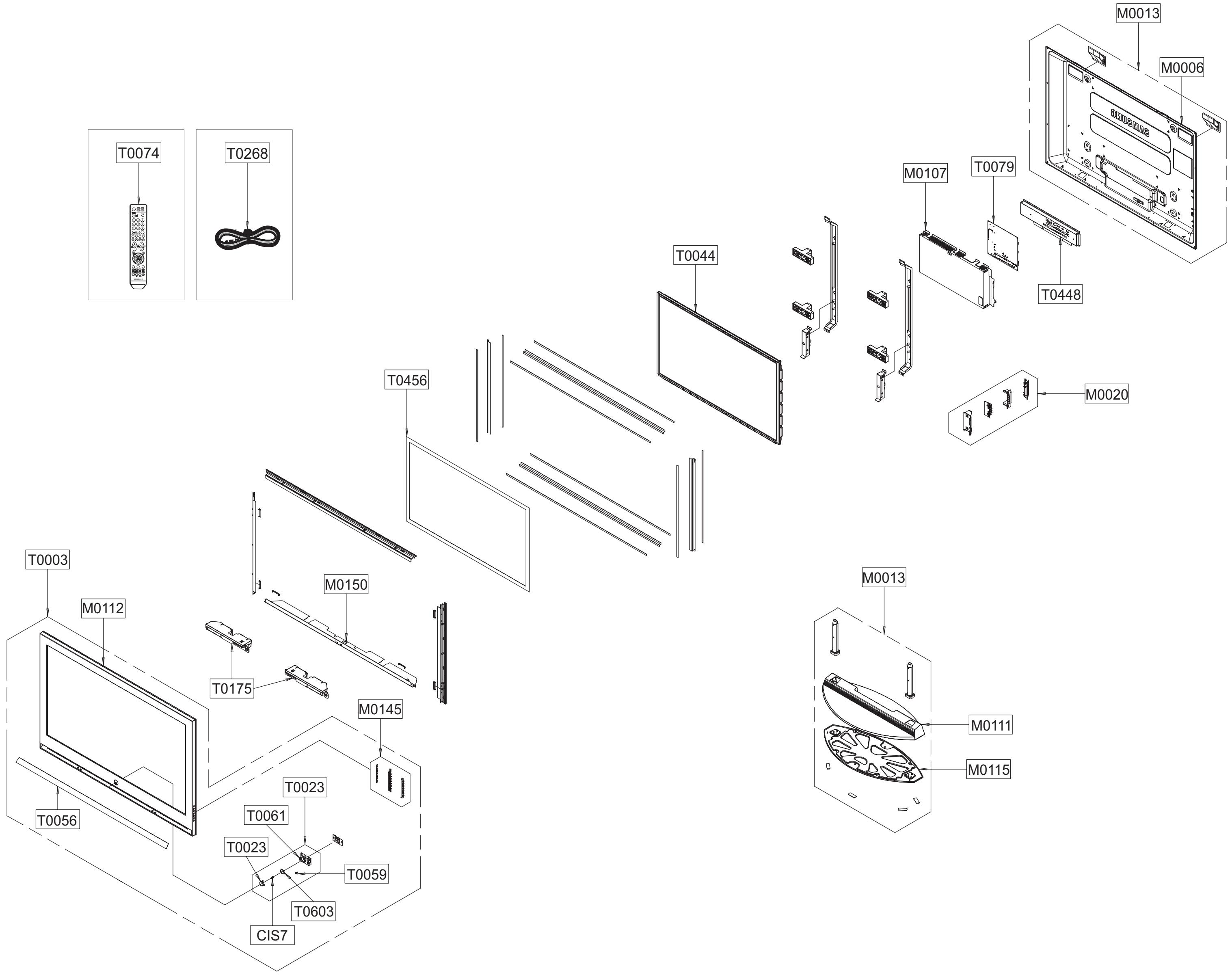

Test Poin
Vset (Left)
Vscan (Right)
Vg
Vset
Vscan
Vscan/Vset
Adjustment
Point
VE
Adjustment
Point
Ve Test Point
Vg
Ve

* Use base chassis of PDP panel as GND point.

4. Exploded View & Part List

4-1 PS42Q7HX/XEH

You can search for the updated part code through ITSELF web site.
URL:http://itself.sec.samsung.co.kr



Loc. No.	Code No.	Description	Specification	Q'ty	SA/SNA	Remark
CIS7	AA61-60003B	SPRING ETC-CS	-,SUS304,-,-,OD11.2,N7,OD1	1	S.N.A	
M0006	BN63-02383A	COVER-REAR	42C7,PCM,0.5	1	S.N.A	
M0013	BN96-03154A	ASSY STAND P-BASE	Q7,HGI T3.0,BK23,Round	1	S.A	
M0013	BN96-03160A	ASSY COVER P-REAR	42C7,P7,PCM T0.5	1	S.A	
M0020	BN96-03075F	ASSY BOARD P-SIDE AV	AUDI,SJ06-01-004F,S	1	S.N.A	
M0107	BN61-02315D	BRACKET-PCB	42C7,SECC,0.8	1	S.N.A	
M0111	BN63-02564A	COVER-STAND	Q7,ABS,HB,SF0507,BK23	1	S.N.A	
M0112	BN63-02374D	COVER-FRONT	42Q7/P7H,ABS,HB,XEC,BK23	1	S.N.A	
M0115	BN61-02338A	BRACKET-STAND	42C7,SECC,3.0	1	S.N.A	
M0145	BN96-02784B	ASSY BOARD P-FUNCTION	CADILLAC,SJ06-01-0	1	S.A	
M0150	BN96-03135A	ASSY BRACKET P-FILTER BOTTOM	42C7,P7,A60	1	S.N.A	
T0003	BN96-03764D	ASSY COVER P-FRONT	42Q7(HQ),ABS HB,BK23	1	S.A	
T0023	BN96-03173A	ASSY COVER P-KNOB POWER	42P7,ABS	1	S.N.A	
T0023	BN64-00459A	KNOB POWER	42P7,PC,Violet	1	S.N.A	
T0044	BN96-03288A	ASSY PDP MODULE P	M1,42HD,V5.1,1024*768,	1	S.A	
T0056	BN63-02386A	COVER-DECORATION	42Q7,PC SHEET,T0.5,Silv	1	S.N.A	
T0059	BN64-00461A	INDICATOR LED	42P7,PMMA	1	S.N.A	
T0061	BN64-00462A	WINDOW-REMOCON	42P7,ACRYL,5%	1	S.N.A	
T0074	BN59-00539A	REMOCON	AUDI,TM87B,SAMSUNG,54Key,31mArms	1	S.A	
T0079	BN94-00962B	ASSY PCB MISC-MAIN	PS-42Q7H,EU,D74A,AUDI	1	S.A	
T0175	BN96-03392A	ASSY SPEAKER P	8ohm,Q7,10W,2Way,2speaker	1	S.A	
T0268	3903-000145	CBF-POWER CORD	DT,EU,FP3/YES,U(IEC C13-R	1	S.A	
T0448	BN96-03144D	ASSY BRACKET P-TERMINAL	42C7,P7,SECC T0.	1	S.N.A	
T0456	BN67-00172A	GLASS-FILTER EMI	42" Q7, C7 No B/C,Mesh,	1	S.A	
T0603	BN64-00460A	KNOB-DECORATION POWER	42P7,ABS,HB,AL	1	S.N.A	

5. Electrical Part List

5-1 PS42Q7HX/XEH Service Item

You can search for the updated part code through ITSELF web site.
URL:http://itself.sec.samsung.co.kr

Loc. No.	Code No.	Description	Specification	Q'ty	SA/SNA	Remark
M0013	BN96-03154A	ASSY STAND P-BASE	Q7,HGI T3.0,BK23,Round	1	S.A	
M0013	BN96-03160A	ASSY COVER P-REAR	42C7,P7,PCM T0.5	1	S.A	
M0018	BN97-00857A	ASSY MICOM	T-AUDMPEU-S-1001,PS42E7,D74A,	1	S.A	
M2893	BN39-00632B	LEAD CONNECTOR	PS-42E7HX/XEC,UL1617#22,U	1	S.A	
M2893	BN39-00667D	LEAD CONNECTOR-LVDS	AUDI,UL20276#30,31PI	1	S.A	
M2893	BN39-00675A	LEAD CONNECTOR	PUCCINI,UL1007#26,10PIN,1	1	S.A	
M2893	BN39-00676A	LEAD CONNECTOR	PUCCINI,UL1007#26,12PIN,1	1	S.A	
T0003	BN96-03764D	ASSY COVER P-FRONT	42Q7(HQ),ABS HB,BK23	1	S.A	
T0044	BN96-03288A	ASSY PDP MODULE P	M1,42HD,V5.1,1024*768,	1	S.A	
T0074	BN59-00539A	REMOCON	AUDI,TM87B,SAMSUNG,54Key,31mArm	1	S.A	
T0079	BN94-00962B	ASSY PCB MISC-MAIN	PS-42Q7H,EU,D74A,AUDI	1	S.A	
T0159	BN96-01856A	ASSY PCB P-SMPS	SPD-50P5HD(DC_DC),200Vin	1	S.A	
T0159	BN96-03052A	ASSY PCB P-SMPS	PS42E7H,100~240V,245*370	1	S.A	
T0175	BN96-03392A	ASSY SPEAKER P	8ohm,Q7,10W,2Way,2speaker	1	S.A	
T1910	BN96-03350A	ASSY PDP MODULE P-X MAIN BOARD	42HD,PL42	1	S.A	
T1911	BN96-03351A	ASSY PDP MODULE P-Y MAIN BOARD	42HD,PL42	1	S.A	
T1914	BN96-03353A	ASSY PDP MODULE P-ADDRESS E BU	42HD,PL42	1	S.A	
T1915	BN96-03354A	ASSY PDP MODULE P-ADDRESS F BU	42HD,PL42	1	S.A	
T1917	BN96-03355A	ASSY PDP MODULE P-LOGIC MAIN B	42HD,PL42	1	S.A	
T9698	BN96-03352A	ASSY PDP MODULE P-Y MAIN SCAN	42HD,PL42A	1	S.A	

MEMO

6. Troubleshooting

6-1 First Checklist for Troubleshooting

1. Check the various cable connections first.
   - Check to see if there is a burnt or damaged cable.
   - Check to see if there is a disconnected cable connection or a connection is too loose.
   - Check to see if the cables are connected according to the connection diagram.

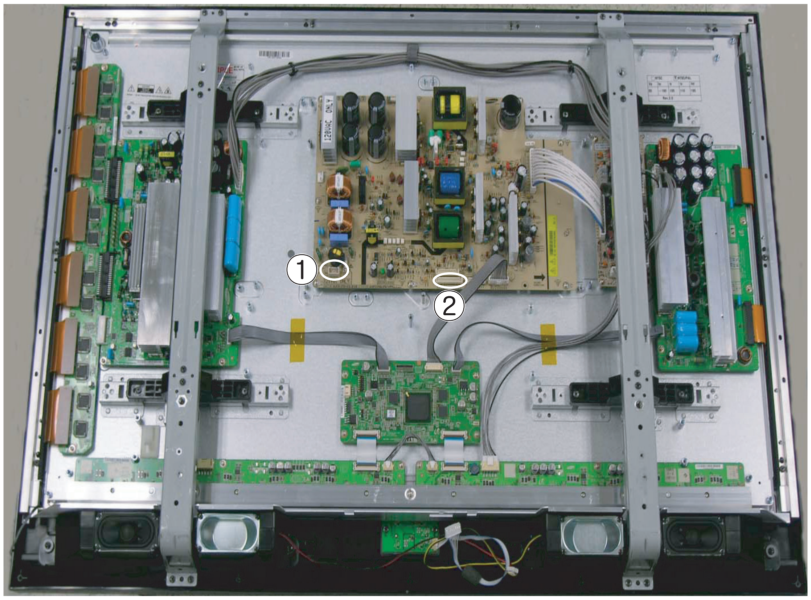
2. Check the power input to the Main Board.

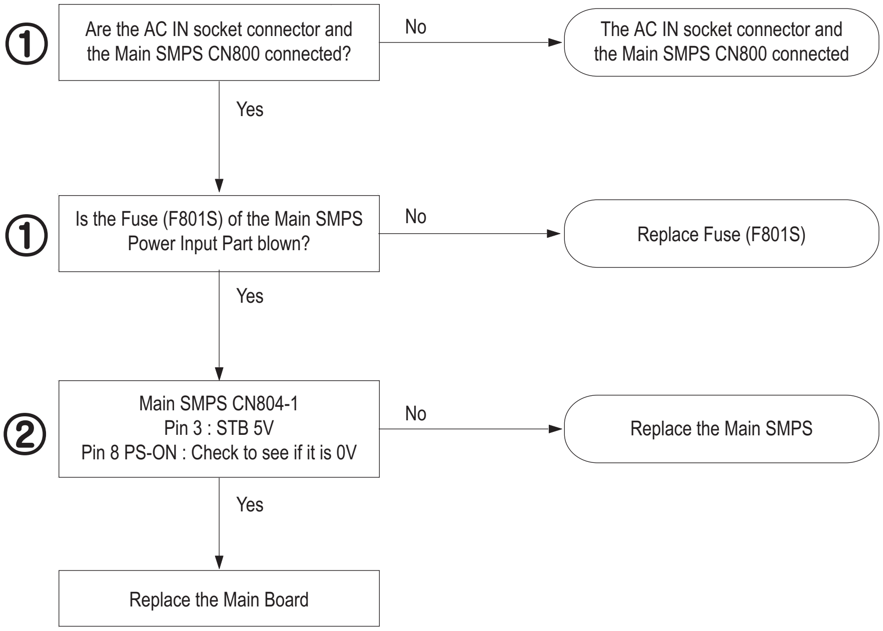
3. Check the voltage in and out between the SMPS ↔ Main Board, between the SMPS ↔ X, Y Main Board, and between the Logic Boards.

6-2 Checkpoints by Error Mode

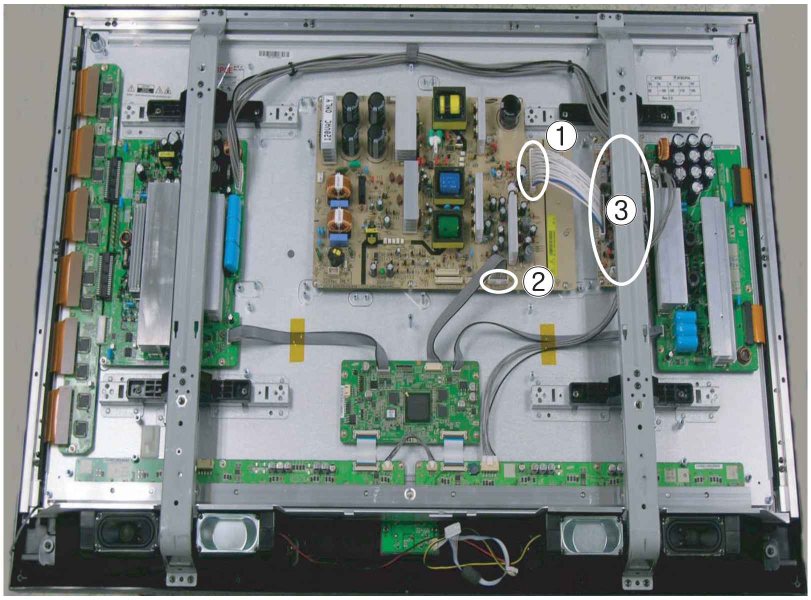
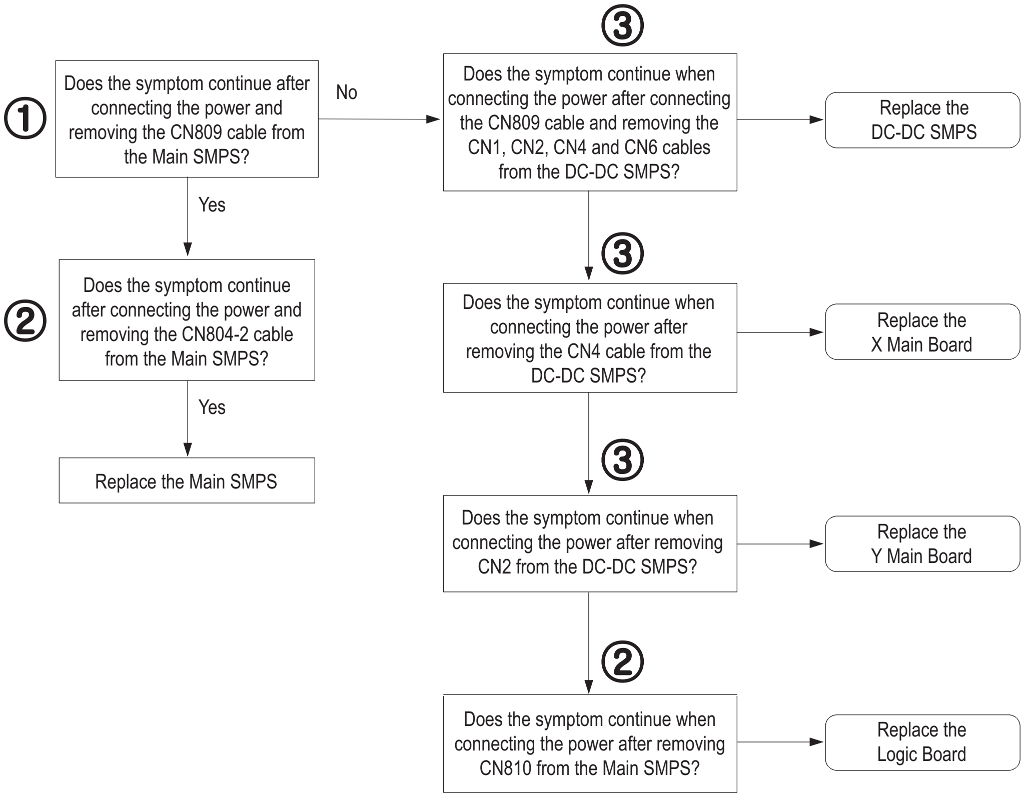
6-2-1 No Power

Symptom	- The LEDs on the front panel do not work when connecting the power cord. - The SMPS relay does not work when connecting the power cord. - The power of the unit seems to be out of order.
Major Checklist	The SMPS relay or the LEDs on the front panel do not work when connecting the power cord if the cables are improperly connected or the Main Board or SMPS is out of order. In this case, check the following: - Check the internal cable connection status inside the unit. - Check the fuses of each part. - Check the output voltage of SMPS. - Replace the Main Board.
Troubleshooting Procedures	

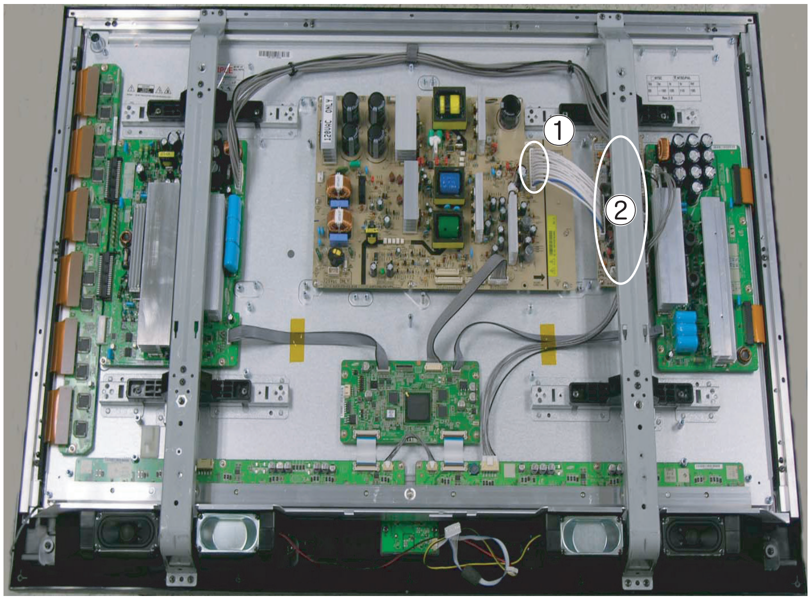
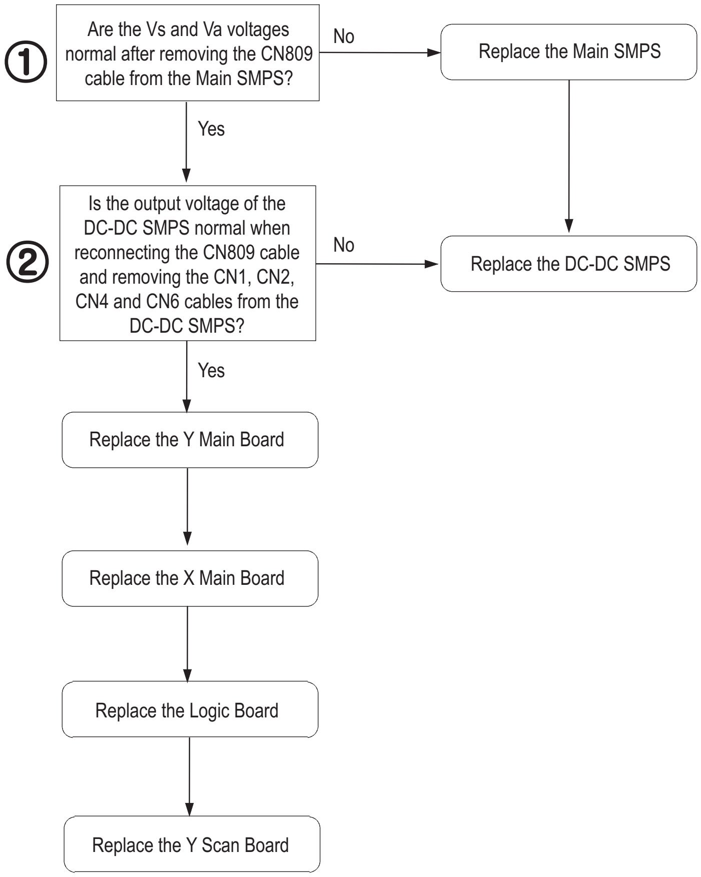



①
Are the AC IN socket connector and the Main SMPS CN800 connected?
No
The AC IN socket connector and the Main SMPS CN800 connected
Yes
①
Is the Fuse (F801S) of the Main SMPS Power Input Part blown?
No
Replace Fuse (F801S)
Yes
②
Main SMPS CN804-1
Pin 3 : STB 5V
Pin 8 PS-ON : Check to see if it is 0V
No
Replace the Main SMPS
Yes
Replace the Main Board

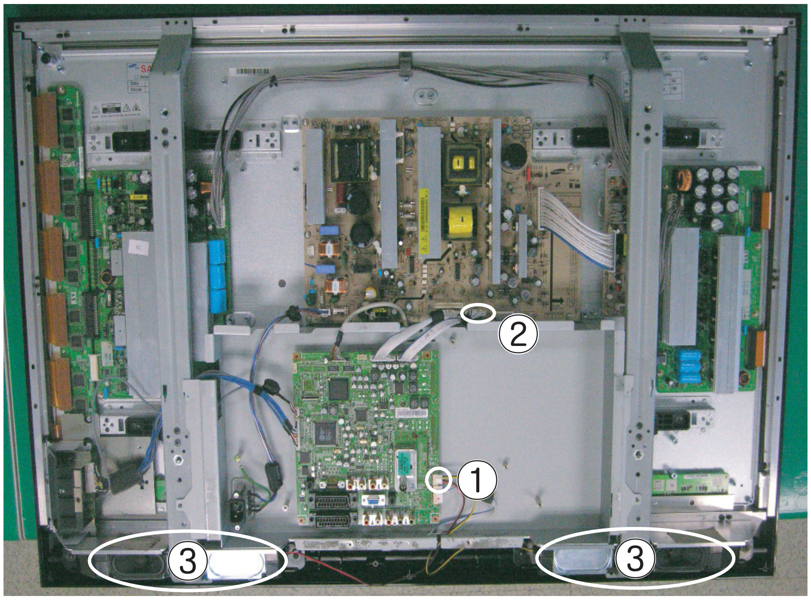
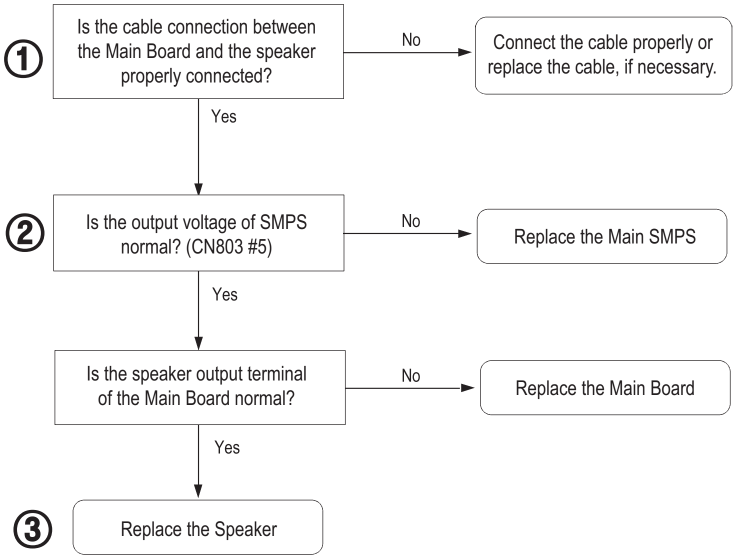
6-2-2 When the unit is repeatedly turned on and off

Symptom	- The SMPS relay is repeatedly turned on and off.
Major Checklist	In general, the SMPS relay repeatedly turns on and off by the protection function due to a defect on a board connected to the SMPS. - Disconnect all cables from the SMPS, operate the SMPS alone and check if the SMPS works properly and if each voltage output is correct. - If the symptom continues even when SMPS is operated alone, replace the SMPS. - If the symptom is not observed when operating the SMPS alone, find any defective ASSYs by connecting the cables one by one.
Troubleshooting Procedures	  ① Does the symptom continue after connecting the power and removing the CN809 cable from the Main SMPS? ② Does the symptom continue after connecting the power and removing the CN804-2 cable from the Main SMPS? Replace the Main SMPS ③ Does the symptom continue when connecting the power after connecting the CN809 cable and removing the CN1, CN2, CN4 and CN6 cables from the DC-DC SMPS? Replace the DC-DC SMPS ③ Does the symptom continue when connecting the power after removing the CN4 cable from the DC-DC SMPS? Replace the X Main Board ③ Does the symptom continue when connecting the power after removing CN2 from the DC-DC SMPS? Replace the Y Main Board ② Does the symptom continue when connecting the power after removing CN810 from the Main SMPS? Replace the Logic Board
Caution	When separating and connecting the cables such as CN809 of the Main SMPS, CN1, CN2, CN3, CN4 and CN5 of DC-DC SMPS, CN of the X Main Board, and CN of the Y Main Board, a spark may be generated by the electric charge of the high capacity capacitor. Therefore, wait some time after separating the power cord from the unit.

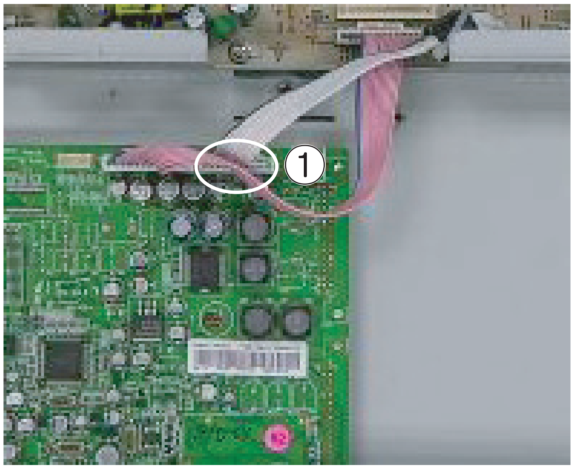
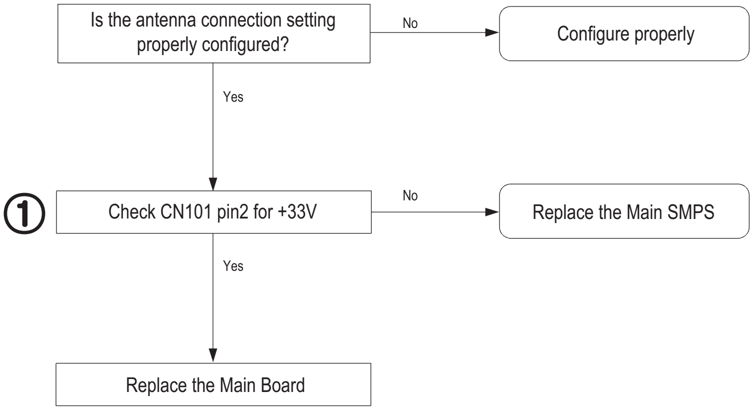
6-2-3 No Picture (When audio is normal)

Symptom	- Audio is normal but no picture is displayed on the screen.
Major Checklist	- This may happen when the Main Board is normal but the X, Y Main Board, Logic Board, or Y Buffer Board is out of order. - The output voltage of the Main SMPS or the DC-DC SMPS is out of order. - This may happen when the LVDS cable connecting the Main Board and the Logic Board is disconnected.
Troubleshooting Procedures	  ① Are the Vs and Va voltages normal after removing the CN809 cable from the Main SMPS? No Replace the Main SMPS Yes ② Is the output voltage of the DC-DC SMPS normal when reconnecting the CN809 cable and removing the CN1, CN2, CN4 and CN6 cables from the DC-DC SMPS? No Replace the DC-DC SMPS Yes Replace the Y Main Board Replace the X Main Board Replace the Logic Board Replace the Y Scan Board
Caution	When separating and connecting the cables such as CN809 of the Main SMPS, CN1, CN2, CN3, CN4 and CN5 of the DC-DC SMPS, CN of the X Main Board, and CN of the Y Main Board, a spark may be generated by the electric charge of the high capacity capacitor. Therefore, wait some time after separ ating the power cord from the unit.

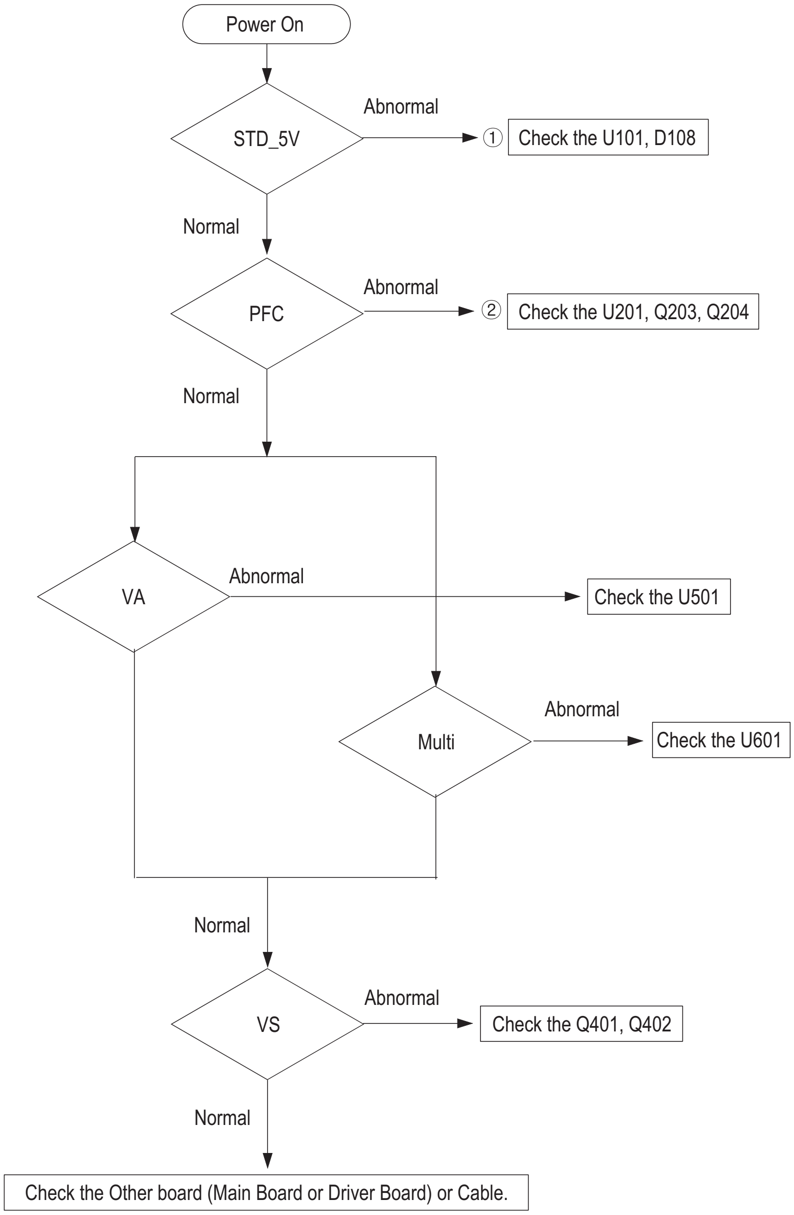
6-2-4 No Sound

Symptom	- Video is normal but there is no sound.
Major Checklist	- When the speaker connectors are disconnected or damaged. - When the sound processing part of the Main Board is out of order. - Speaker defect. - When setting the volume to 0 (Nonsense).
Troubleshooting Procedures	  ① Is the cable connection between the Main Board and the speaker properly connected? No Connect the cable properly or replace the cable, if necessary. Yes ② Is the output voltage of SMPS normal? (CN803 #5) No Replace the Main SMPS Yes Is the speaker output terminal of the Main Board normal? No Replace the Main Board Yes ③ Replace the Speaker

6-2-5 No Video

Symptom	- A normal/cable network analog broadcast screen is blank or abnormal.
Major Checklist	- Check the antenna connection settings (Antenna 1 - Normal/Cable/DTV, Antenna 2 - Only for DTV) - Check the tuner output signal (CVBS). - Check the power input of the Main board.
Troubleshooting Procedures	  Is the antenna connection setting properly configured? No Configure properly Yes ① Check CN101 pin2 for +33V No Replace the Main SMPS Yes Replace the Main Board

6-2-6 Main SMPS Troubleshooting


Power On
STD_5V
Abnormal
① Check the U101, D108
Normal
PFC
Abnormal
② Check the U201, Q203, Q204
Normal
VA
Abnormal
Check the U501
Multi
Abnormal
Check the U601
Normal
VS
Abnormal
Check the Q401, Q402
Normal
Check the Other board (Main Board or Driver Board) or Cable.

6-2-7 Drive Board Troubleshooting

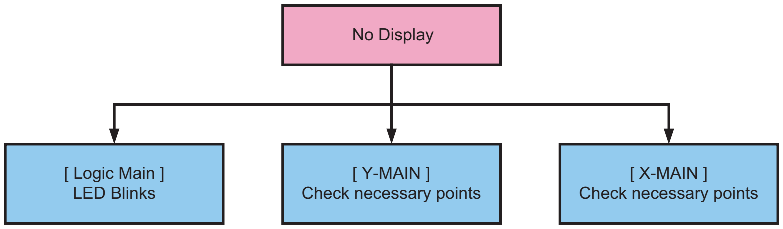
1) Troubleshooting Summary

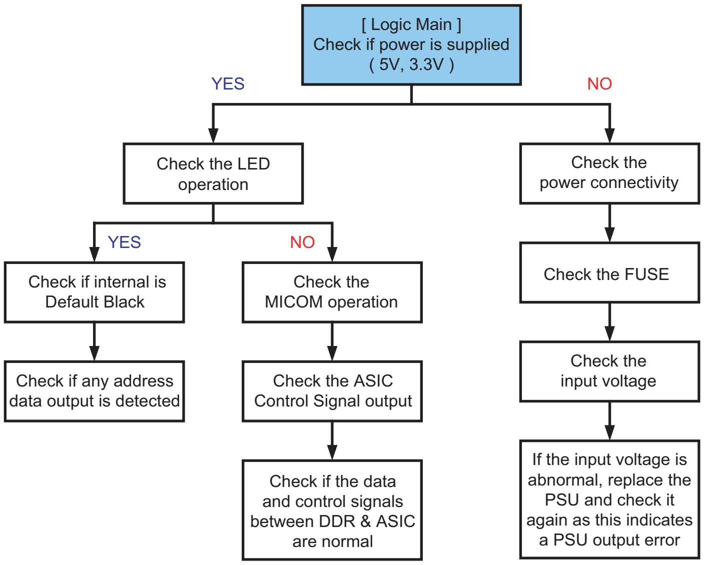
Condition Name	Description	Related Board
No Voltage Output	Operating Voltage don't exist	PSU
No Display	Operating Voltage exist, but an Image doesn't exist on screen	Y-MAIN, X-MAIN, Logic Main, Cable
Abnormal Display	Abnormal Image (not open or short) is no screen	Y-MAIN, X-MAIN, Logic Main
Sustain Open	Some horizontal lines don't exist on screen	Scan Buffer, FPC of X/Y
Sustain Short	Some horizontal lines appear to be linked on screen	Scan Buffer, FPC of X/Y
Address Open	Some vertical lines don't exist on screen	Logic Main, Logic Buffer, TCP
Address Short	Some vertical lines appear to be linked on screen	Logic Main, Logic Buffer, TCP

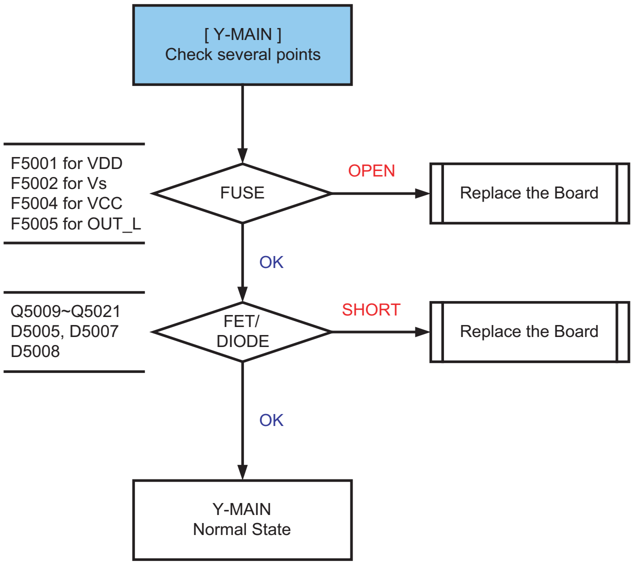
2) Troubleshooting Procedure in Abnormal Conditions

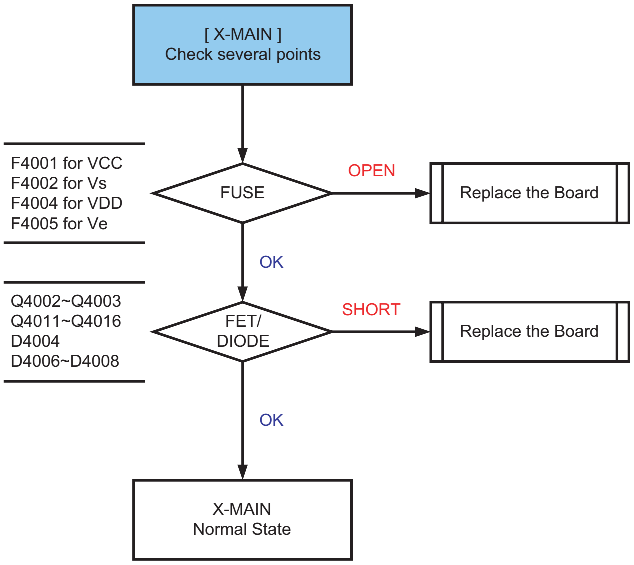
① No Display (Operating Voltage exist, but an doesn't exist on Screen)

▶ No Display is related with Y-MAIN, X-MAIN, Logic Main and so on.
This page shows you how to check the boards, and the following pages show you how to find the defective board.


No Display
[Logic Main]
LED Blinks
[Y-MAIN]
Check necessary points
[X-MAIN]
Check necessary points

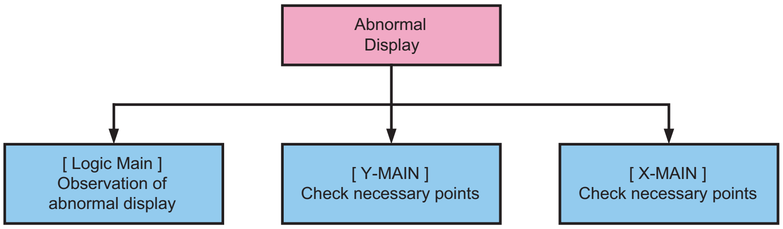

[Logic Main]
Check if power is supplied
(5V, 3.3V)
YES
NO
Check the LED operation
YES
NO
Check if internal is Default Black
Check if any address data output is detected
Check the MICOM operation
Check the ASIC Control Signal output
Check if the data and control signals between DDR & ASIC are normal
Check the power connectivity
Check the FUSE
Check the input voltage
If the input voltage is abnormal, replace the PSU and check it again as this indicates a PSU output error

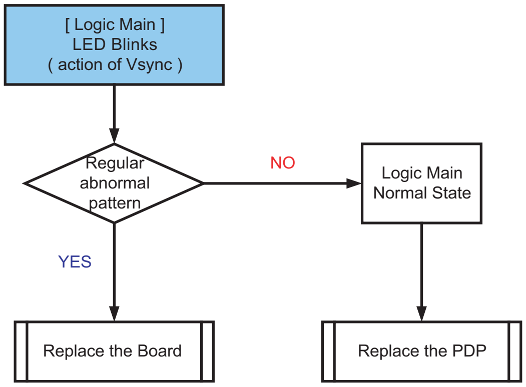

[Y-MAIN]
Check several points
F5001 for VDD
F5002 for Vs
F5004 for VCC
F5005 for OUT_L
FUSE
OPEN
Replace the Board
OK
Q5009~Q5021
D5005, D5007
D5008
FET/
DIODE
SHORT
Replace the Board
OK
Y-MAIN
Normal State

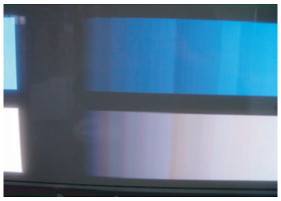

[X-MAIN]
Check several points
F4001 for VCC
F4002 for Vs
F4004 for VDD
F4005 for Ve
FUSE
OPEN
Replace the Board
OK
Q4002~Q4003
Q4011~Q4016
D4004
D4006~D4008
FET/
DIODE
SHORT
Replace the Board
OK
X-MAIN
Normal State

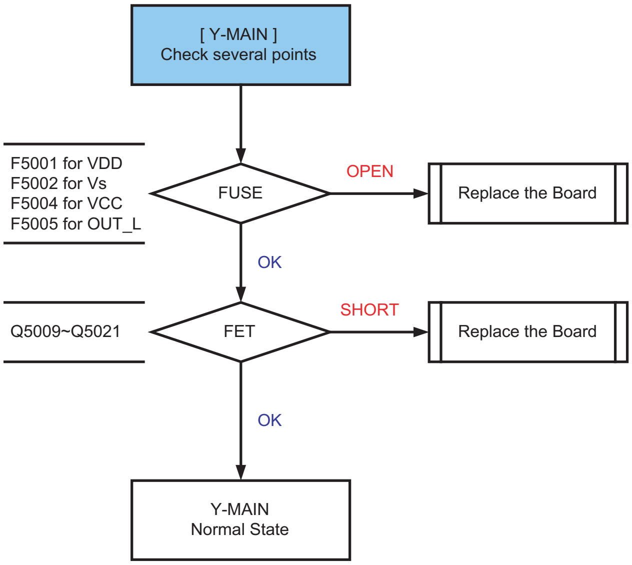
② Abnormal Display(Abnormal Image is on Screen.(except abnormality in Sustain or Address)

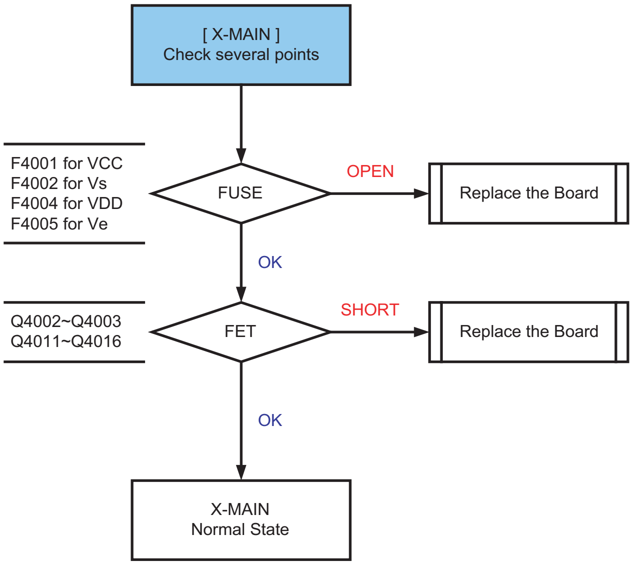
▶ Abnormal Display is related with Y-MAIN, X-MAIN, Logic Main and so on.
This page shows you how to check the boards, and the following pages show you how to find the defective board.


Abnormal Display
[Logic Main] Observation of abnormal display
[Y-MAIN] Check necessary points
[X-MAIN] Check necessary points

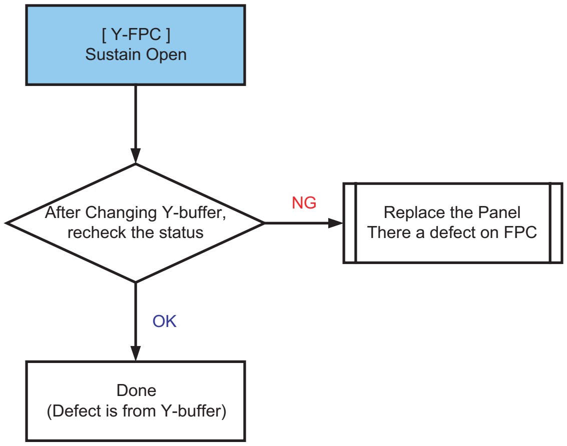

[Logic Main] LED Blinks (action of Vsync)
Regular abnormal pattern
NO
Logic Main Normal State
YES
Replace the Board
Replace the PDP



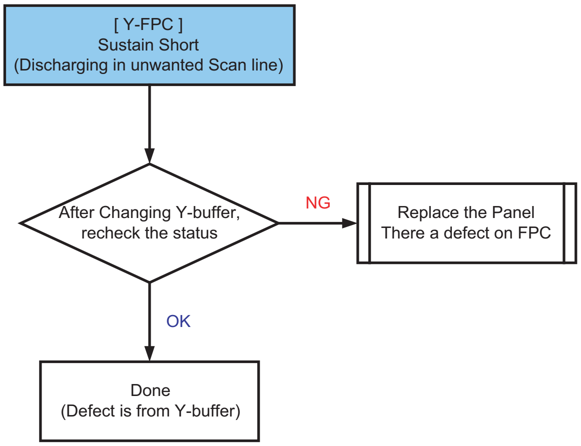

[Y-MAIN] Check several points
F5001 for VDD
F5002 for Vs
F5004 for VCC
F5005 for OUT_L
FUSE
OPEN
Replace the Board
OK
Q5009~Q5021
FET
SHORT
Replace the Board
OK
Y-MAIN Normal State


[X-MAIN] Check several points
F4001 for VCC
F4002 for Vs
F4004 for VDD
F4005 for Ve
FUSE
OPEN
Replace the Board
OK
Q4002~Q4003
Q4011~Q4016
FET
SHORT
Replace the Board
OK
X-MAIN Normal State

③ Sustain Open (some horizontal lines don't exist on screen)

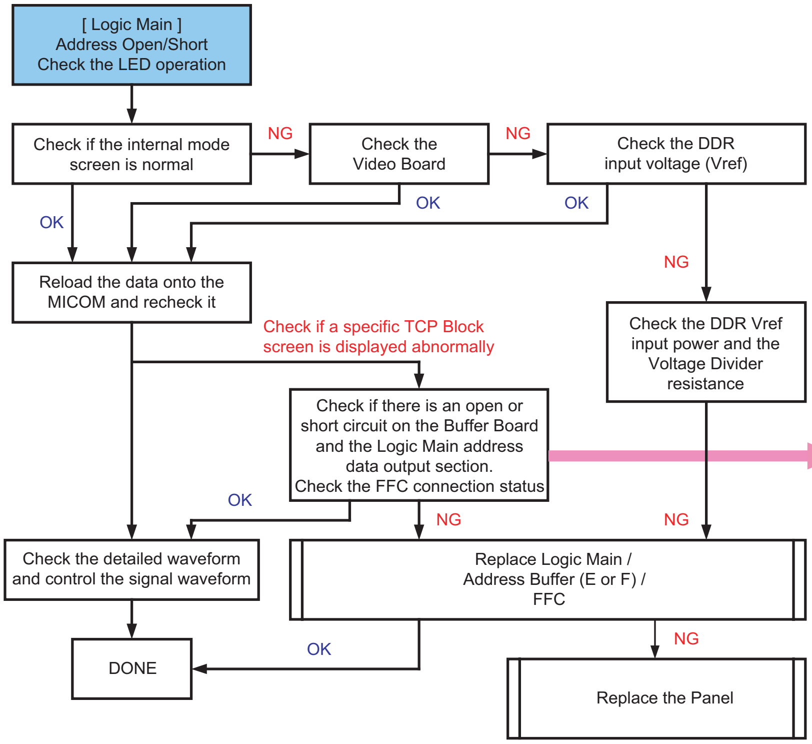

[Y-FPC]
Sustain Open
After Changing Y-buffer, recheck the status
NG
Replace the Panel
There a defect on FPC
OK
Done
(Defect is from Y-buffer)

④ Sustain Short (some horizontal lines appear to be linked on Video)


[Y-FPC]
Sustain Short
(Discharging in unwanted Scan line)
After Changing Y-buffer, recheck the status
NG
Replace the Panel
There a defect on FPC
OK
Done
(Defect is from Y-buffer)

⑤ Address Open, Short(some vertical lines don't exist on screen)

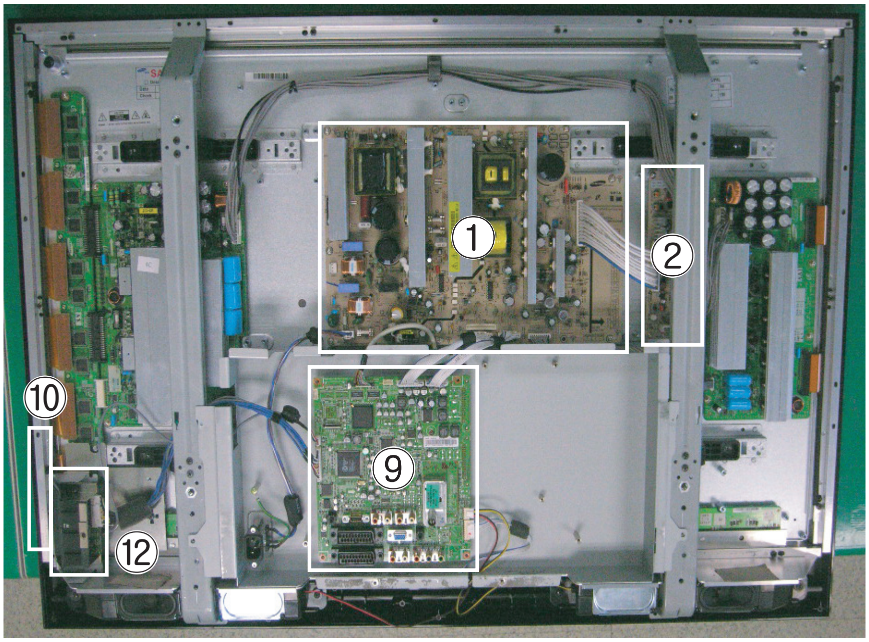
▶ Address Open and Short is related with Logic Main, Logic Buffer, FFC, TCP film and so on.
This page shows you how to check the boards, and the following pages show you how to find the defective board.

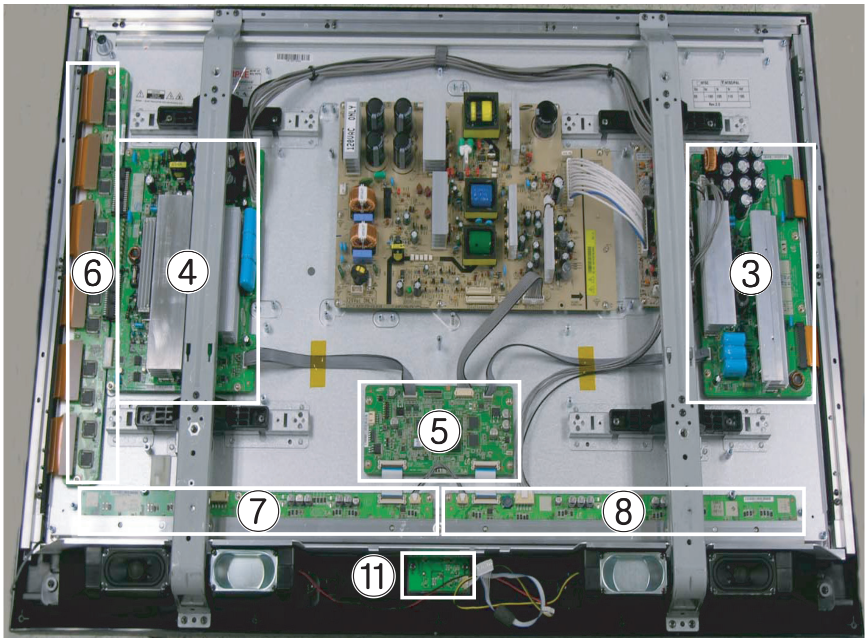

[Logic Main]
Address Open/Short
Check the LED operation
Check if the internal mode screen is normal
NG
Check the Video Board
NG
Check the DDR input voltage (Vref)
OK
OK
OK
Reload the data onto the MICOM and recheck it
NG
Check if a specific TCP Block screen is displayed abnormally
Check the DDR Vref input power and the Voltage Divider resistance
Check if there is an open or short circuit on the Buffer Board and the Logic Main address data output section.
Check the FFC connection status
OK
NG
NG
Check the detailed waveform and control the signal waveform
Replace Logic Main / Address Buffer (E or F) / FFC
DONE
OK
NG
Replace the Panel

6-3 Troubleshooting Procedures by ASS'Y

※ The ASS'Y code can be changed, see "5 Chapter. Electrical Part List."

No	Assy	Code No.	Description	Major Symptoms
1	ASSY PCB P-SMPS	BN96-03052A	Main SMPS	No power, Blank screen, the Relay repeats On and Off.
2	ASSY PCB P-SMPS	BN96-01856A	DC-DC SMPS	Blank screen, the Relay repeats On and Off.
3	ASSY PDP P-X MAIN BOARD	BN96-03350A	X Main Board	Blank screen
4	ASSY PDP P-Y MAIN BOARD	BN96-03351A	Y Main Board	Blank screen
5	ASSY PDP MODUEL P-LOGIC MAIN BOARD	BN96-03355A	Logic Board	Blank screen, Screen noise
6	ASSY PDP P-Y SCAN BOARD	BN96-03352A	Y Scan Board	Row Bar screen is blank
7	ASSY PDP P-ADDRESS E-BUFF BOARD	BN96-03353A	Address E Buffer Board	Corresponding Buffer Board block screen is blank.
8	ASSY PDP P-ADDRESS F-BUFF BOARD	BN96-03354A	Address F Buffer Board	Corresponding Buffer Board block screen is blank.
9	ASSY PCB MISC-MAIN	BN94-00962B	Main Board	No Power, Abnormal screen for each input source, PIP screen trouble, Sound trouble
10	ASSY BOARD P-FUNCTION	BN96-02784B	Function Key Board	The side function key does not work properly
11	ASSY BOARD P-POWER&IR	BN96-03320A	Power Button Board	The remote control does not work properly, the LED does not work properly.
12	ASSY BOARD P-SIDE AV	BN96-03075F	Side AV Board	The AV2 and S-VIDEO2 modes do not work properly

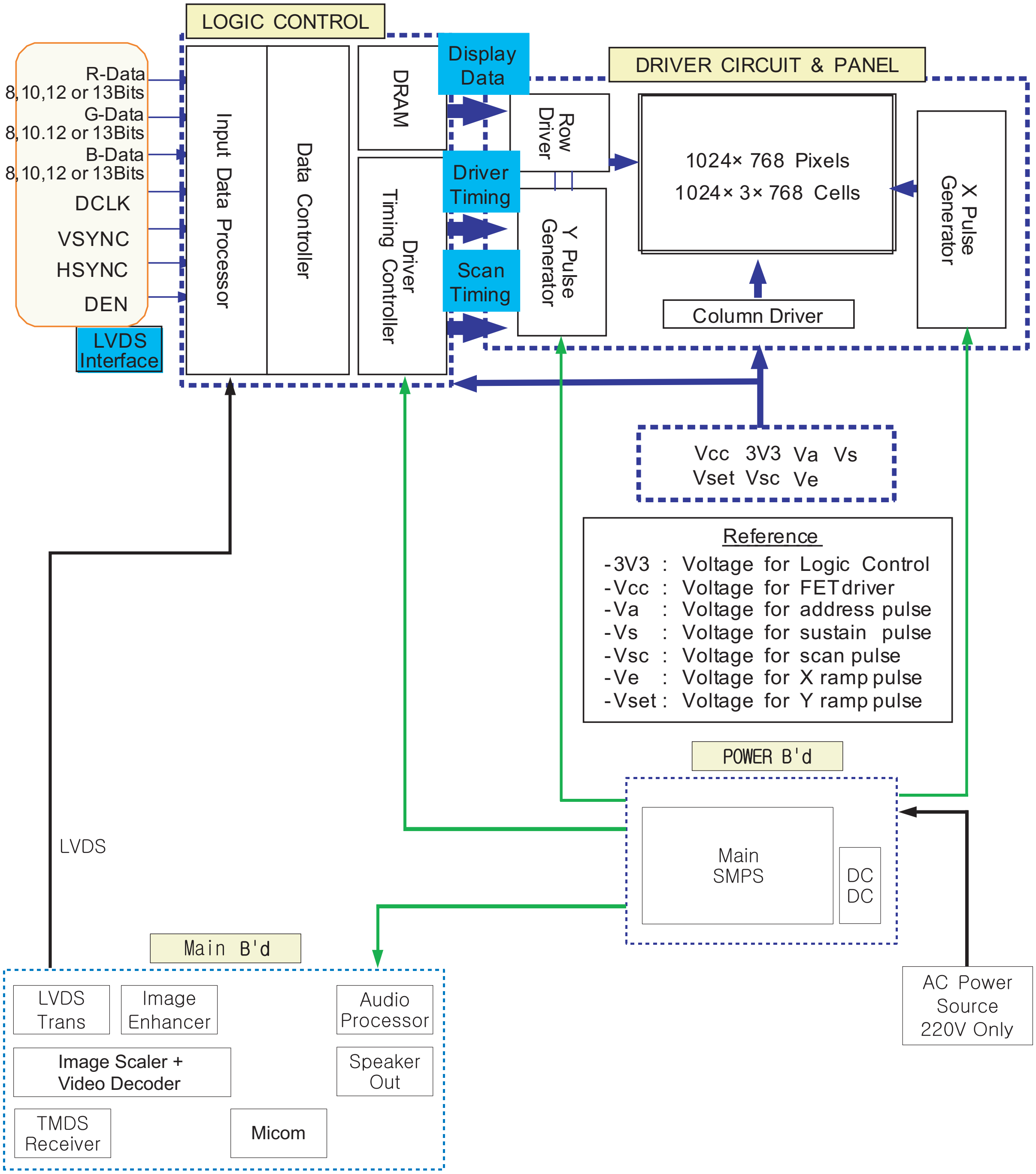




MEMO

7. Block Diagram

7-1 Overall Block Diagram


LOGIC CONTROL
R-Data
8,10,12 or 13Bits
G-Data
8,10.12 or 13Bits
B-Data
8,10,12 or 13Bits
DCLK
VSYNC
HSYNC
DEN
LVDS Interface
Input Data Processor
Data Controller
DRAM
Driver Timing Controller
Display Data
Driver Timing
Scan Timing
DRIVER CIRCUIT & PANEL
Row Driver
Y Pulse Generator
1024× 768 Pixels
1024× 3× 768 Cells
Column Driver
X Pulse Generator
Vcc 3V3 Va Vs
Vset Vsc Ve
LVDS
POWER B'd
Main SMPS
DC DC
AC Power Source 220V Only
Main B'd
LVDS Trans
Image Enhancer
Audio Processor
Image Scaler + Video Decoder
Speaker Out
TMDS Receiver
Micom

Reference

- -3V3 : Voltage for Logic Control
- -Vcc : Voltage for FETdriver
- -Va : Voltage for address pulse
- -Vs : Voltage for sustain pulse
- -Vsc : Voltage for scan pulse
- -Ve : Voltage for X ramp pulse
- -Vset : Voltage for Y ramp pulse

CN804-1(Main SMPS) ↔ CN102(Main Board)	
Pin No.	Signal
1	5.3V
2	RTN
3	N/C
4	N/C
5	RTN
6	RTN
7	12V
8	PS_ON
9	RTN
10	STBY
11	FAN_ON
12	FAN_D

CN803(Main SMPS) ↔ CN101(Main Board)	
Pin No.	Signal
1	6.5V
2	RTN
3	12V
4	RTN
5	18Vamp
6	18Vamp
7	RTN_amp
8	RTN_amp
9	Vt
10	RTN

CN810(Main SMPS) ↔ CN2013(Logic Board)	
Pin No.	Signal
1	STBY
2	VS_ON
3	N/C
4	PS_ON
5	RTN
6	5.3V
7	RTN
8	RTN
9	5.3V
10	5.3V

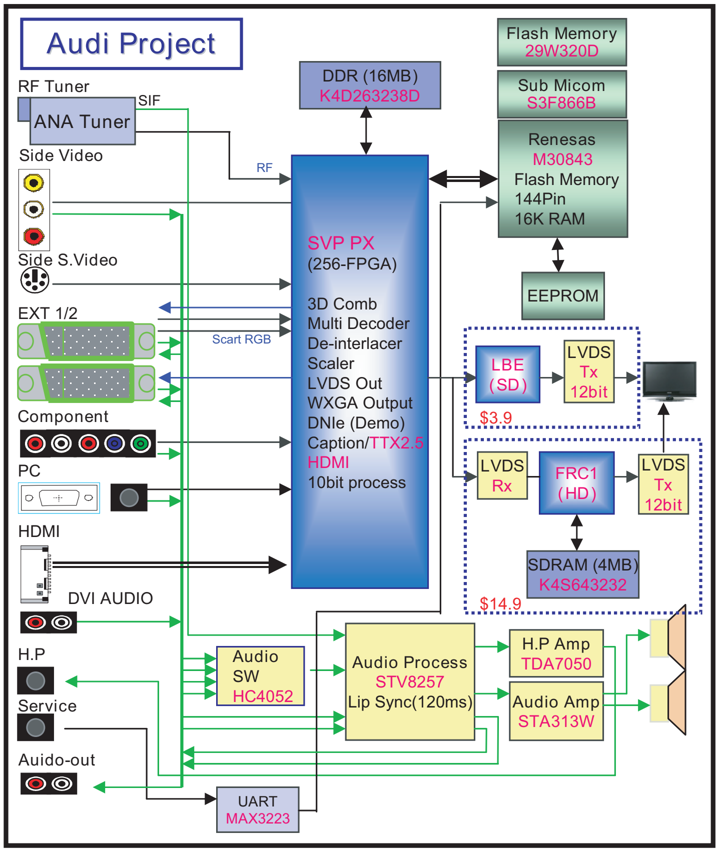
CN2(DC-DC SMPS) ↔ CN5007(Y B'D)	
Pin No.	Signal
1	Vs
2	Vs
3	RTN
4	RTN
5	Vset
6	RTN
7	Vscan
8	RTN
9	Vg
10	D5.3V

CN4(DC-DC SMPS) ↔ CN4001(X B'D)	
Pin No.	Signal
1	D5.3V
2	Vg
3	RTN
4	RTN
5	Ve
6	RTN
7	RTN
8	Vs
9	Vs

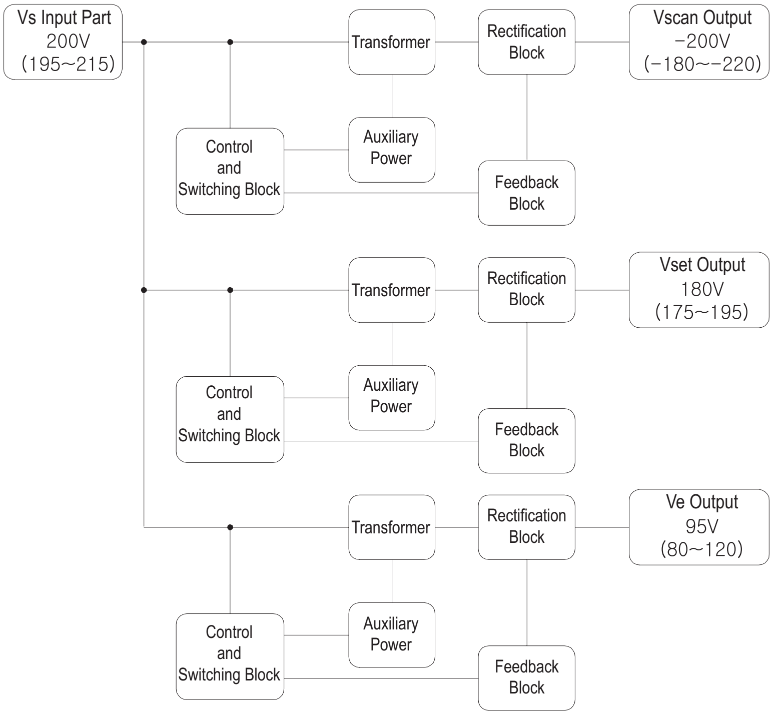
CN6(DC-DC SMPS) ↔ CN2509(E-Buffer)	
Pin No.	Signal
1	RTN
2	N.C
3	D5.3V
4	N/C
5	Va

7-2 Partial Block Diagram

7-2-1 Main Board Block Diagram

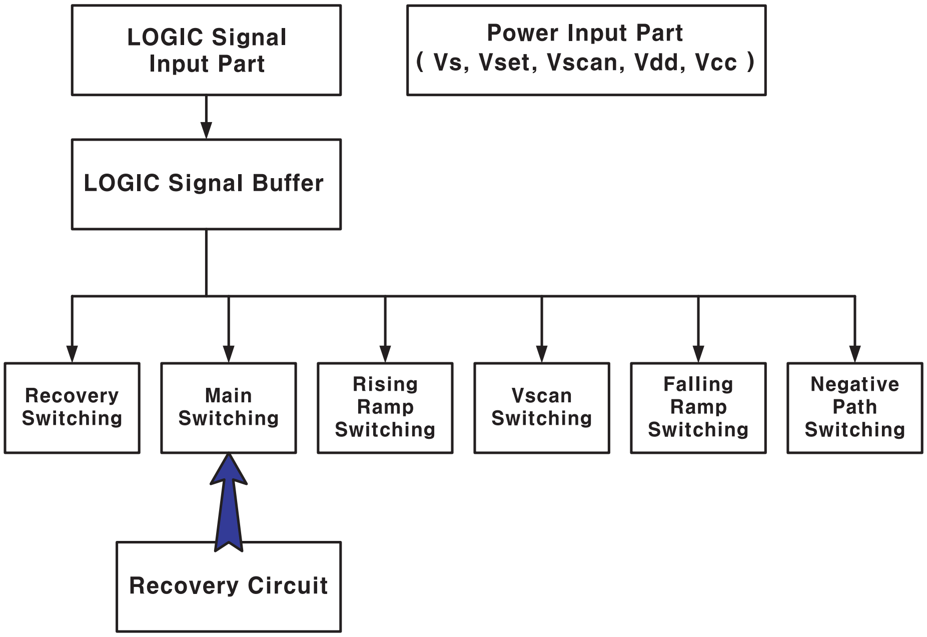

Audi Project
RF Tuner
ANA Tuner
SIF
RF
Side Video
Side S.Video
EXT 1/2
Scart RGB
Component
PC
HDMI
DVI AUDIO
H.P
Service
Auido-out
DDR (16MB)
K4D263238D
SVP PX
(256-FPGA)
3D Comb
Multi Decoder
De-interlacer
Scaler
LVDS Out
WXGA Output
DNIe (Demo)
Caption/TTX2.5
HDMI
10bit process
Flash Memory
29W320D
Sub Micom
S3F866B
Renesas
M30843
Flash Memory
144Pin
16K RAM
EEPROM
LBE
(SD)
LVDS
Tx
12bit
$3.9
LVDS
Rx
FRC1
(HD)
LVDS
Tx
12bit
SDRAM (4MB)
K4S643232
$14.9
Audio
SW
HC4052
Audio Process
STV8257
Lip Sync(120ms)
H.P Amp
TDA7050
Audio Amp
STA313W
UART
MAX3223

7-2-2 DC-DC SMPS Block Diagram

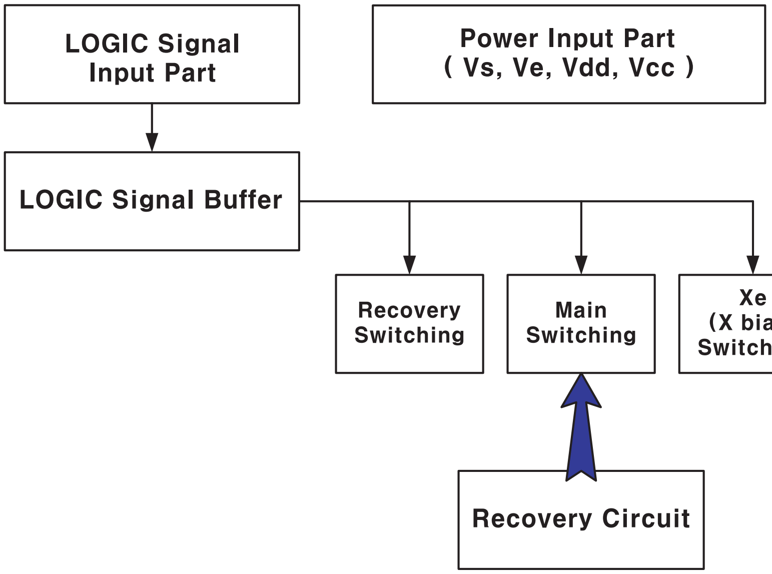

Vs Input Part
200V
(195~215)
Transformer
Rectification
Block
Vscan Output
−200V
(−180~−220)
Control
and
Switching Block
Auxiliary
Power
Feedback
Block
Transformer
Rectification
Block
Vset Output
180V
(175~195)
Control
and
Switching Block
Auxiliary
Power
Feedback
Block
Transformer
Rectification
Block
Ve Output
95V
(80~120)
Control
and
Switching Block
Auxiliary
Power
Feedback
Block

7-2-3 Module Driver Board Block Diagram

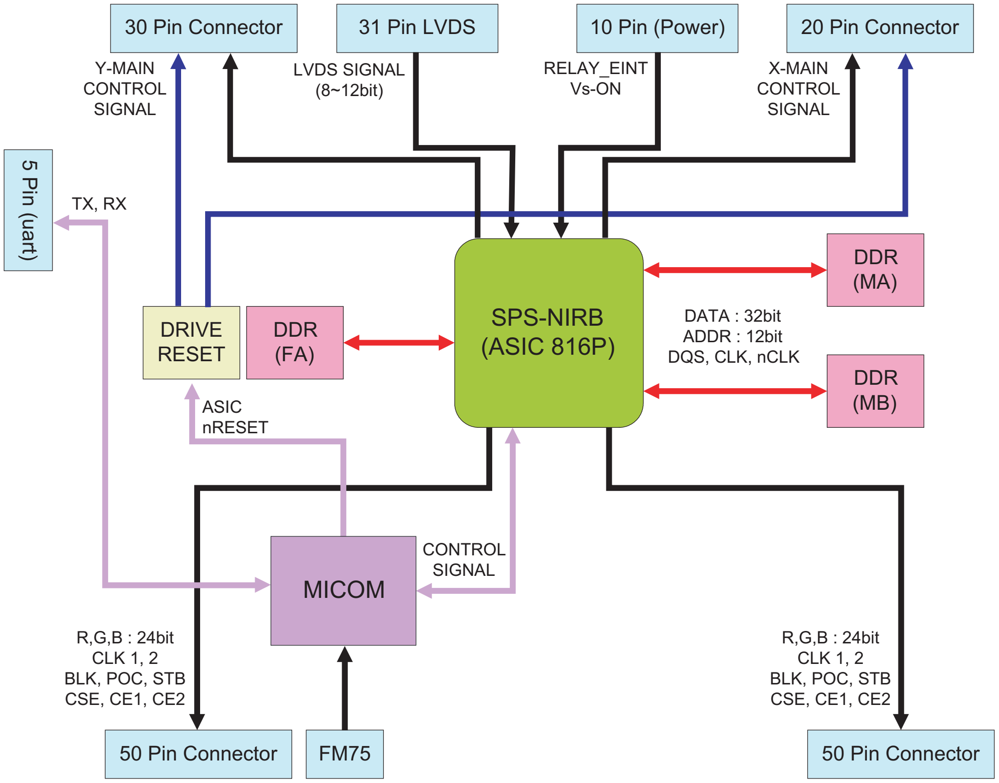
1. Y Main Board


LOGIC Signal Input Part
Power Input Part (Vs, Vset, Vscan, Vdd, Vcc)
LOGIC Signal Buffer
Recovery Switching
Main Switching
Rising Ramp Switching
Vscan Switching
Falling Ramp Switching
Negative Path Switching
Recovery Circuit

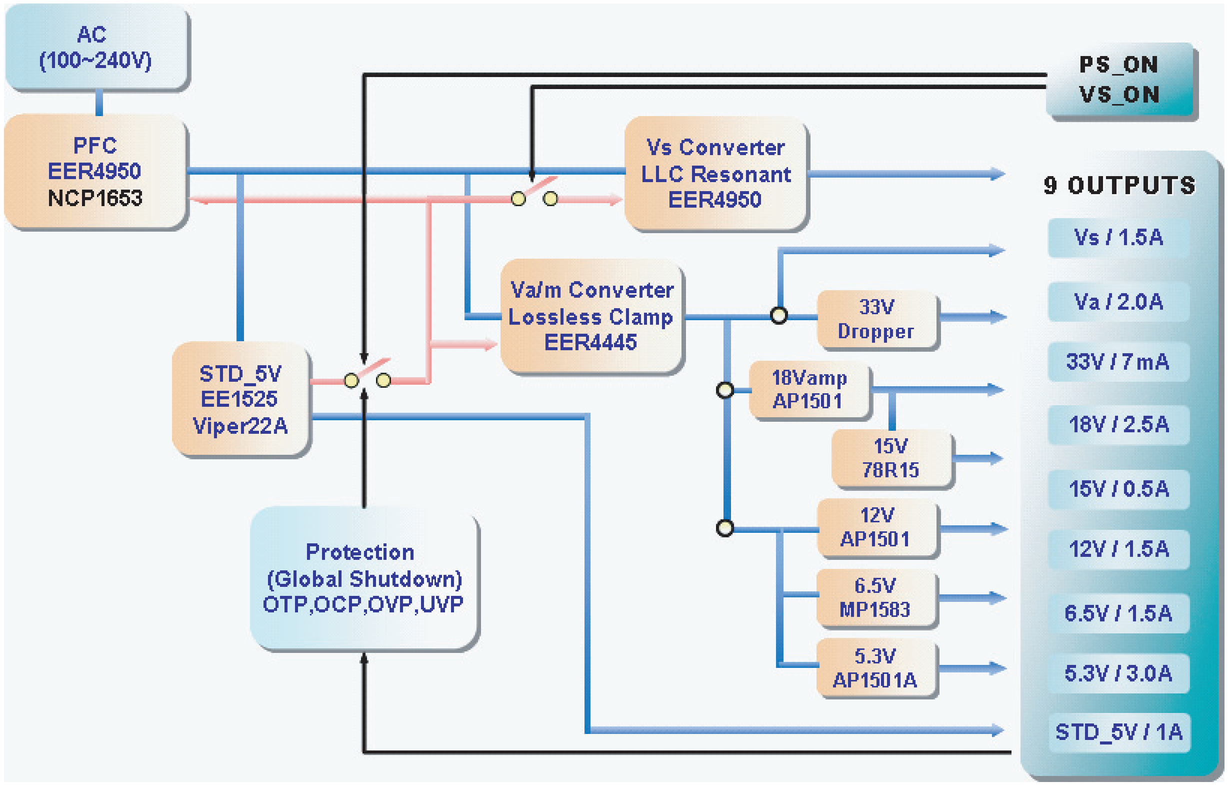
2. X Main Board


LOGIC Signal Input Part
Power Input Part (Vs, Ve, Vdd, Vcc)
LOGIC Signal Buffer
Recovery Switching
Main Switching
Xe (X bias) Switching
Recovery Circuit

7-2-4 Logic Board Block Diagram


30 Pin Connector
31 Pin LVDS
10 Pin (Power)
20 Pin Connector
Y-MAIN CONTROL SIGNAL
LVDS SIGNAL (8~12bit)
RELAY_EINT Vs-ON
X-MAIN CONTROL SIGNAL
5 Pin (uart)
TX, RX
DRIVE RESET
DDR (FA)
SPS-NIRB (ASIC 816P)
DDR (MA)
DATA : 32bit
ADDR : 12bit
DQS, CLK, nCLK
DDR (MB)
ASIC nRESET
CONTROL SIGNAL
MICOM
R,G,B : 24bit
CLK 1, 2
BLK, POC, STB
CSE, CE1, CE2
R,G,B : 24bit
CLK 1, 2
BLK, POC, STB
CSE, CE1, CE2
50 Pin Connector
FM75
50 Pin Connector

7-2-5 Power Block Diagram

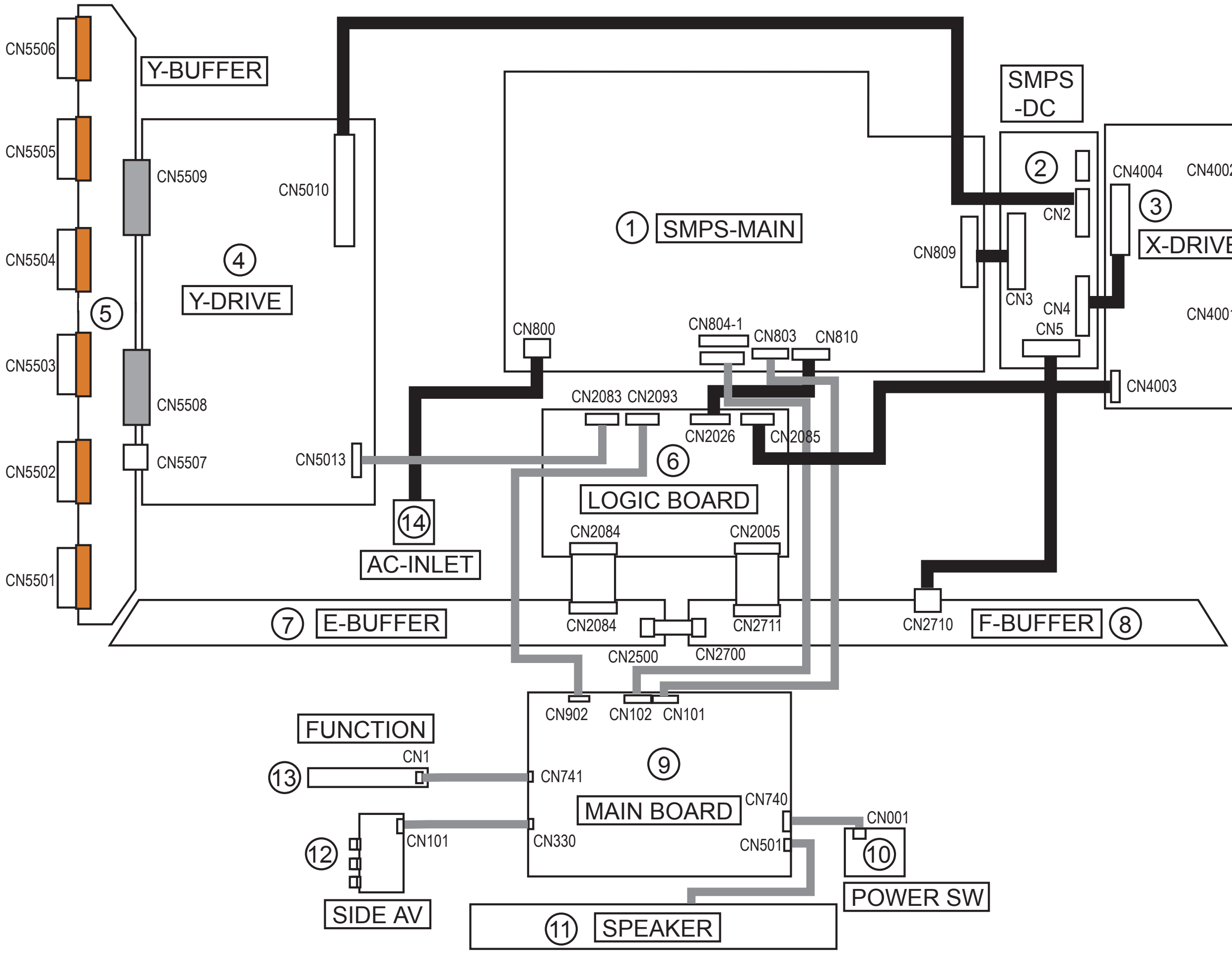

AC (100~240V)
PFC EER4950 NCP1653
PS_ON
VS_ON
Vs Converter LLC Resonant EER4950
9 OUTPUTS
Vs / 1.5A
Va/m Converter Lossless Clamp EER4445
33V Dropper
Va / 2.0A
33V / 7mA
STD_5V EE1525 Viper22A
18Vamp AP1501
18V / 2.5A
15V 78R15
15V / 0.5A
12V AP1501
12V / 1.5A
Protection (Global Shutdown) OTP,OCP,OVP,UVP
6.5V MP1583
6.5V / 1.5A
5.3V AP1501A
5.3V / 3.0A
STD_5V / 1A

MEMO

8. Wiring Diagram

8-1 Overall Wiring

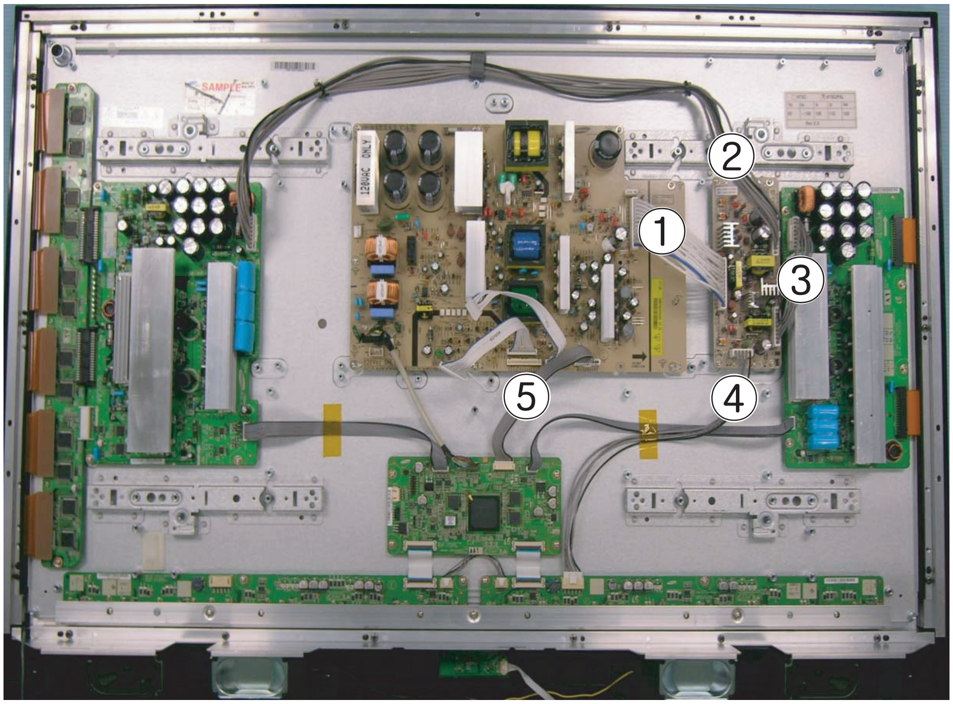
※ The ASS'Y code can be changed, see "5 Chapter. Electrical Part List."


CN5506
Y-BUFFER
CN5505
CN5509
CN5010
CN5504
④
Y-DRIVE
⑤
CN5503
CN5508
CN5502
CN5507
CN5013
CN5501
⑭
AC-INLET
SMPS
-DC
②
CN2
CN4004
CN4002
③
X-DRIVE
①
SMPS-MAIN
CN809
CN3
CN4
CN5
CN4001
CN800
CN804-1
CN803
CN810
CN4003
CN2083
CN2093
CN2026
CN2085
⑥
LOGIC BOARD
CN2084
CN2005
⑦
E-BUFFER
CN2084
CN2711
CN2500
CN2700
CN2710
F-BUFFER
⑧
FUNCTION
CN1
⑬
CN902
CN102
CN101
CN741
⑨
MAIN BOARD
CN740
CN001
⑫
CN101
CN330
CN501
⑩
POWER SW
SIDE AV
⑪
SPEAKER

No	Assy	Code No.	Description
–	ASSY PDP MODULE P	BN96-03288A	M1,42HD,V5.1,1024*768,NTSC/PAL,complementary color,with logic
①	ASSY PCB P-SMPS	BN96-03052A	PS42E7H,100~240V,245*370mm
②	ASSY PCB P-SMPS	BN96-01856A	SPD-50P5HD(DC_DC),200Vin(DC_DC)
③	ASSY PDP MODULE P-X MAIN BOARD	BN96-03550A	42HD,PL42AX005A,V5.1,NTSC/PAL,1024*768,LJ92-01345A
④	ASSY PDP MODULE P-Y MAIN BOARD	BN96-03351A	42HD,PL42AX005A,V5.1,NTSC/PAL,1024*768,LJ92-01346A
⑤	ASSY PDP MODULE P-Y MAIN SCAN BUFFER	BN96-03352A	42HD,PL42AX005A,V5.1,NTSC/PAL,1024*768,LJ92-01344A
⑥	ASSY PDP MODULE P-LOGIC MAIN BOARD	BN96-03355A	42HD,PL42AX005A,V5.1,NTSC/PAL,1024*768,sec/sesk,
⑦	ASSY PDP P-ADDRESS E BUFFER	BN96-03353A	42HD,PL42AX005A,V5.1,NTSC/PAL,1024*768,LJ92-01343A
⑧	ASSY PDP P-ADDRESS F BUFFER	BN96-03354A	42HD,PL42AX005A,V5.1,NTSC/PAL,1024*768,LJ92-01342A
⑨	ASSY PCB MISC-MAIN	BN94-00962B	PS-42Q7H,EU,D74A,AUDI
⑩	ASSY BOARD P-POWER&IR	BN96-03320A	CADILLAC,SJ05-01-516,POWER & IR,CORE, 250MM
⑪	ASSY SPEAKER P	BN96-03392A	8ohm,Q7,10W,2Way,2speaker,Bass Reflex
⑫	ASSY BOARD P-SIDE AV	BN96-03075F	AUDI,SJ06-01-004F,SIDE-AV,400MM
⑬	ASSY BOARD P-FUNCTION	BN96-02784B	CADILLAC,SJ06-01-006,FUNCTION,600MM, CORE
⑭	FILTER-EMI AC LINE	2901-001378	250V,6A,-,0.15uF/1000pF,50x22.5x37.2mm,BK,-

8-2 Partial Wiring

8-2-1 PDP Module ↔ SMPS Wiring



① CN809(Main SMPS) ↔ CN3(DC-DC SMPS)	
Pin No.	Signal
1	D5.3V
2	Vg
3	RTN
4	RTN
5	RTN
6	RTN
7	RTN
8	Va
9	Va
10	N/C
11	Vs
12	Vs

② CN2(DC-DC SMPS) ↔ CN5007(Y B'D)	
Pin No.	Signal
1	Vs
2	Vs
3	RTN
4	RTN
5	Vset
6	RTN
7	Vscan
8	RTN
9	Vg
10	D5.3V

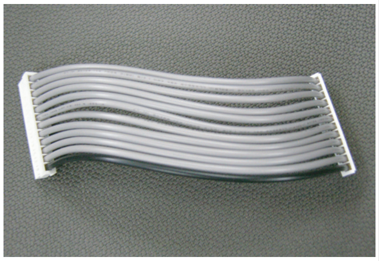
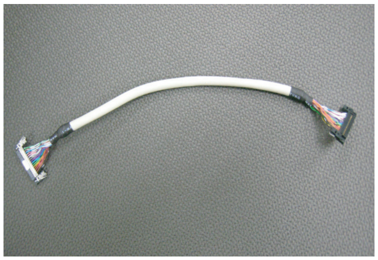
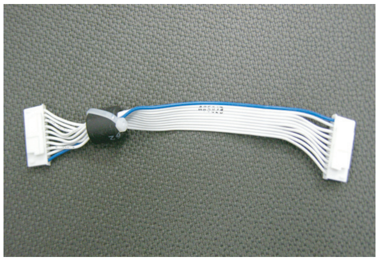
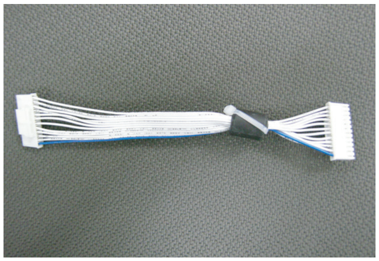
③ CN4(DC-DC SMPS) ↔ CN4001(X B'D)	
Pin No.	Signal
1	D5.3V
2	Vg
3	RTN
4	RTN
5	Ve
6	RTN
7	RTN
8	Vs
9	Vs

④ CN6(DC-DC SMPS) ↔ CN2509(E-Buffer)	
Pin No.	Signal
1	RTN
2	N.C
3	D5.3V
4	N/C
5	Va

⑤ CN810(Main SMPS) ↔ CN2013(Logic B'D)	
Pin No.	Signal
1	STD_5V
2	VS_ON
3	N/C
4	PS_ON
5	RTN
6	D5.3V
7	RTN
8	RTN
9	D5.3V
10	D5.3V

8-2-2 Connect Cables

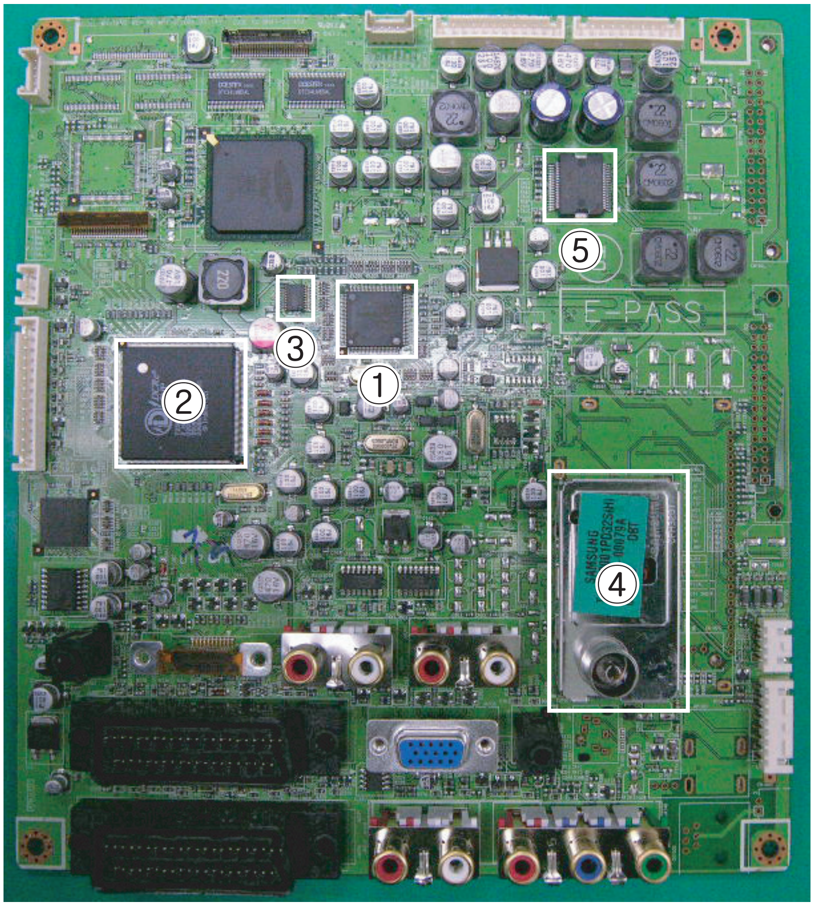
※ The code number of cable(Lead-connector) can be changed, see "5 Chapter. Electrical Part List."

Use	SMPS 12P	LVDS 31P	POWER 10P
Code	BN39-00632B	BN39-00667D	BN39-00675A
Photo			
Use	POWER 12P		
Code	BN39-00676A		
Photo			

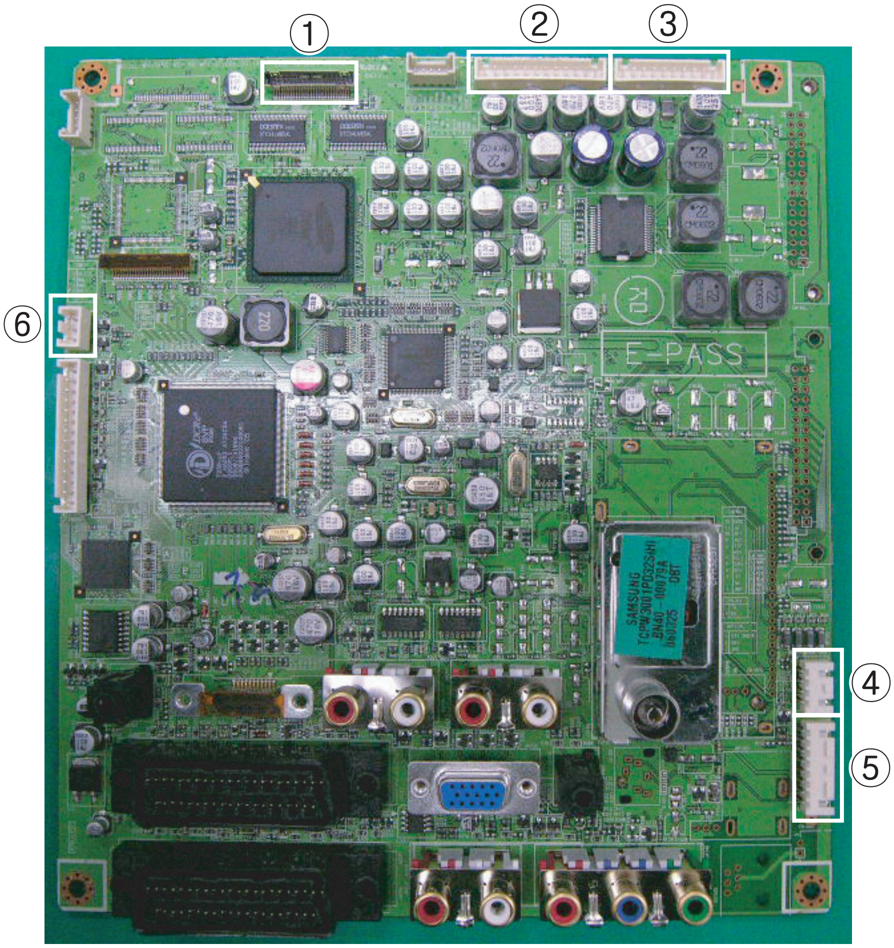
MEMO

9. PCB Diagram

9-1 Main Board



No	Name	Function	Description
①	SVP-PX	Scaler IC Controller	SVPTMPX contains dual-purposed triple 10-bit high-precision and high speed video ADCs for both PC and video inputs, the high speed HDMI could support all HDMI inputs up to 135MHz with HDCP format, the highperformance multi-format 3D digital comb video decoder that supports NTSC, PAL, and SECAM*, a HDTV sync separator, motion adaptive de-interlacing engine, and the video format conversion engine, supporting multi-window display in many different output modes.
②	M30840SGP	IC MICOM	With a 16-Mbyte address space, this microcomputer combines advanced instruction manipulation capabilities to process complex instructions by less bytes and execute instructions at higher speed.
③	FBE	IC DNIe	Image enhancement IC
④	TCPW3001PD32S(H)	TUNER	Tuner CH Tuning
⑤	STA323W	IC AUDIO-AMP	Audio power amplifiers



①
CN2013(Logic B'd) ↔ CN902(Main Board)

Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	GND	12	TXOUT2+	23	TXOUT0B-
2	GND	13	GND	24	TXOUT0B+
3	TXOUT-	14	GND	25	
4	TXOUT+	15	TXOUTCLK-	26	GND
5	GND	16	TXCLKOUT+	27	SCL_G
6	GND	17		28	GND
7	TXOUT-	18		29	SDA_G
8	TXOUT+	19	TXOUT3-	30	GND
9		20	TXOUT3+	31	
10		21		32	GND
11	TXOUT2-	22		33	GND

②
CN804-1(Main SMPS)
↔
CN102(Main Board)

Pin No.	Signal
1	5.3V
2	RTN
3	N/C
4	N/C
5	RTN
6	RTN
7	12V
8	PS_ON
9	RTN
10	STBY
11	FAN_ON
12	FAN_D

③
CN803(Main SMPS)
↔
CN101(Main Board)

Pin No.	Signal
1	6.5V
2	RTN
3	12V
4	RTN
5	18Vamp
6	18Vamp
7	RTN_amp
8	RTN_amp
9	Vt
10	RTN

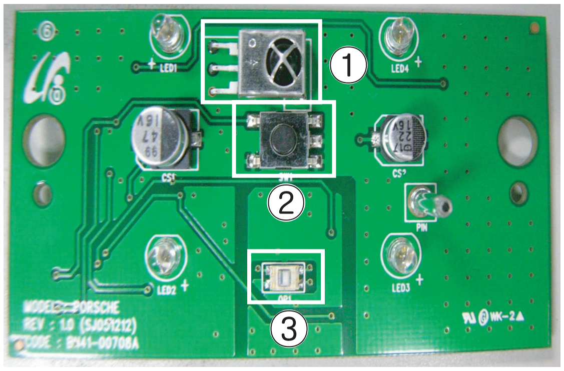
④ CN740(Main Board) ↔ CN001(Power Button)	
Pin No.	Signal
1	GND
2	LED
3	ST5V
4	GND
5	KEY_INPUT2
6	
7	
8	IR_7414

⑤ CN501(Main Board) ↔ Speaker Out	
Pin No.	Signal
1	SPK_R+
2	SPK_R-
3	SPK_L+
4	SPK_L-

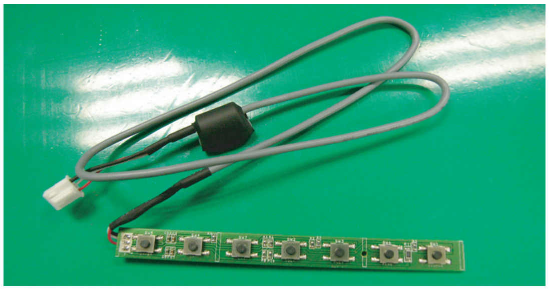
⑥ CN741(Main Board) ↔ CN1(Function Board)	
Pin No.	Signal
1	KEY_INPUT1
2	KEY_INPUT2
3	GND

9-2 Power & IR Board

No	Loc. No.	Description
①	RM1	Remote Control Sensor
②	SW1	Power Button
③	OP1	The Illumination sensor that senses the quantity of light. It senses the illumination and automatically adjusts the screen brightness according to the surrounding brightness when the Power Saving Mode of the User menu is set to Auto.


1
2
3
LED1
LED4
LED2
LED3
MODEL : PORSCHE
REV : 1.0 (SJ051212)
CODE : BN41-00708A

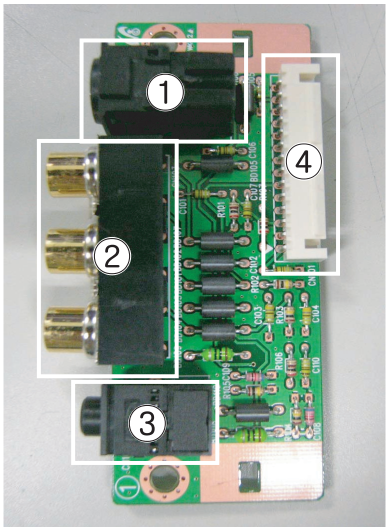
9-3 Function Board



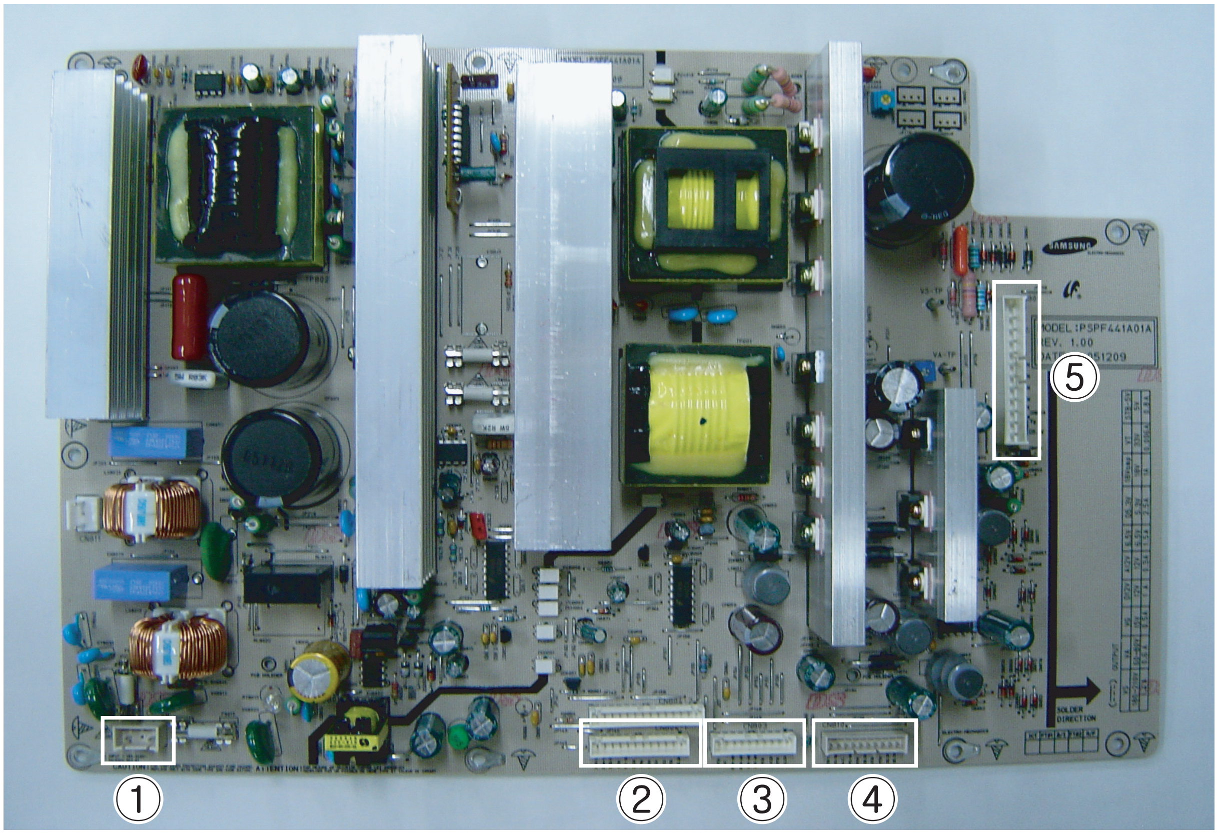
Function Key. Located on the side of the unit.

9-4 Side AV Board

No	Loc. No.	Description
①	CN102	S-VIDEO2 Input Jack
②	CN103	AV2 Input Jack
③	CN104	Earphone Jack
④	CN105	Side AV Connector



9-5 Main SMPS Board



① CN800 : AC IN (90 ~ 264V)

② CN804-1(Main SMPS) ↔ CN102(Main Board)	
Pin No.	Signal
1	5.3V
2	RTN
3	N/C
4	N/C
5	RTN
6	RTN
7	12V
8	PS_ON
9	RTN
10	STBY
11	FAN_ON
12	FAN_D

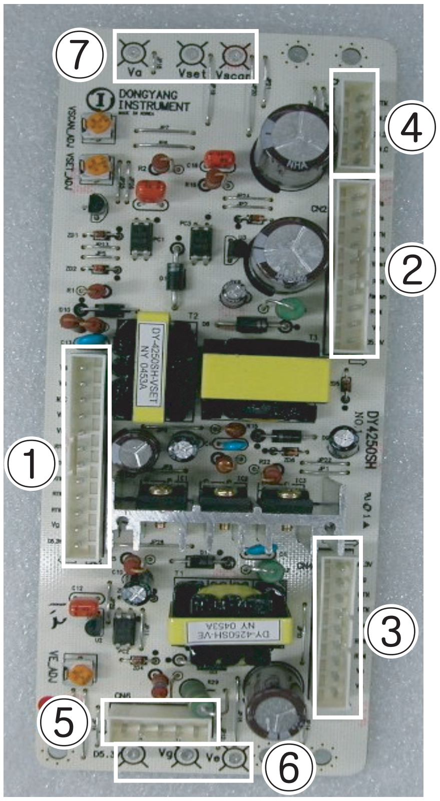
③ CN803(Main SMPS) ↔ CN101(Main Board)	
Pin No.	Signal
1	6.5V
2	RTN
3	12V
4	RTN
5	18Vamp
6	18Vamp
7	RTN_amp
8	RTN_amp
9	Vt
10	RTN

④ CN810(Main SMPS) ↔ CN2013(Logic Board)	
Pin No.	Signal
1	STBY
2	VS_ON
3	N/C
4	PS_ON
5	RTN
6	5.3V
7	RTN
8	RTN
9	5.3V
10	5.3V

⑤ CN809(Main SMPS) ↔ CN3(DC-DC SMPS)	
Pin No.	Signal
1	5.3V
2	Vg
3	RTN
4	RTN
5	RTN
6	RTN
7	RTN
8	Va
9	Va
10	N/C
11	Vs
12	Vs

※ CN811, CN804-2 and CN805, CN806, CN807, CN808 are not used.

9-6 DC-DC SMPS Board


⑦
Va
Vset
Vscan
DONGYANG INSTRUMENT
④
②
①
DY4250SH
③
⑤
Vg
Ve
⑥

① CN809(Main SMPS) ↔ CN3(DC-DC SMPS)	
Pin No.	Signal
1	5.3V
2	Vg
3	RTN
4	RTN
5	RTN
6	RTN
7	RTN
8	Va
9	Va
10	N/C
11	Vs
12	Vs

② CN2(DC-DC SMPS) ↔ CN5007(Y SMPS)	
Pin No.	Signal
1	5.3V
2	Vg
3	RTN
4	Vscan
5	RTN
6	Vset
7	RTN
8	RTN
9	Vs
10	Vs

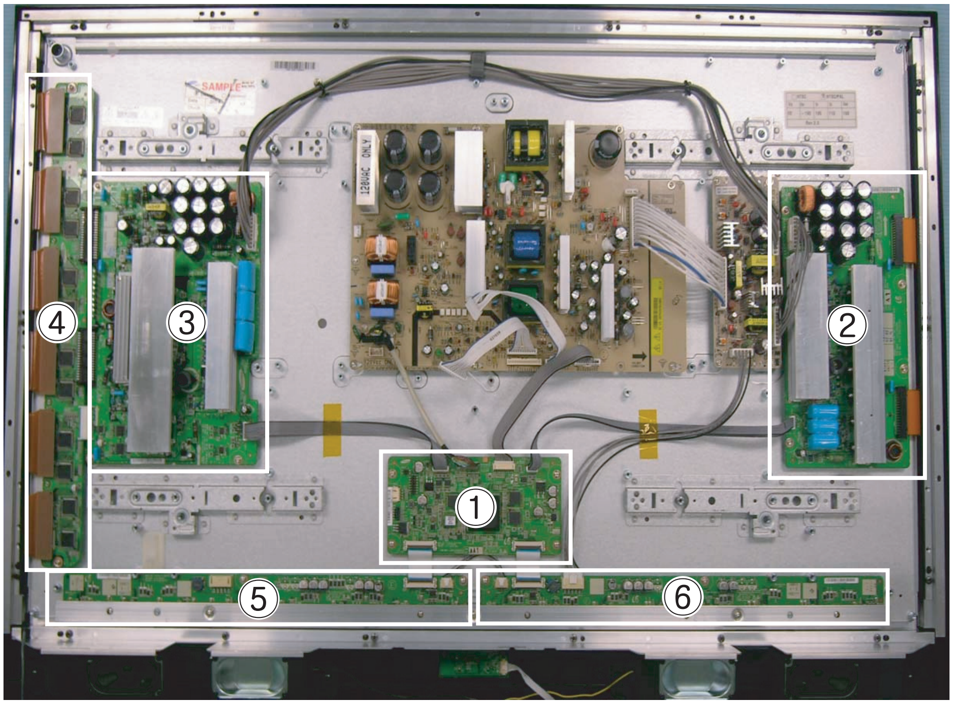
③ CN4(DC-DC SMPS) ↔ CN4001(X SMPS)	
Pin No.	Signal
1	Vs
2	Vs
3	RTN
4	RTN
5	Ve
6	RTN
7	RTN
8	Vg
9	5.3V

④ CN1 : N/A ⑤ CN5(DC-DC SMPS) ↔ CN2509(E-Buffer)	
Pin No.	Signal
1	RTN
2	N/C
3	5.3V
4	N/C
5	Va

⑥ D5.3V, Vg, Ve Test Point
⑦ Va, Vset, Vscan Test Point

9-7 PDP Module

※ The ASS'Y code can be changed, see "5 Chapter. Electrical Part List."



No	Assy	Code No.	Description
①	ASSY PDP MODULE P-LOGIC MAIN BOARD	BN96-03355A	Logic Main Board
②	ASSY PDP MODULE P-X MAIN BOARD	BN96-03350A	X Drive Board
③	ASSY PDP MODULE P-Y MAIN BOARD	BN96-03351A	Y Drive Board
④	ASSY PDP MODULE P-Y MAIN SCAN BUFFER	BN96-03352A	Y Buffer Board
⑤	ASSY PDP MODULE P-ADDRESS E BUFFER	BN96-03353A	Address Buffer Board
⑥	ASSY PDP MODULE P-ADDRESS F BUFFER	BN96-03354A	Address Buffer Board

MEMO

10. Schematic Diagram

10-1 Analog

10-1-1 POWER

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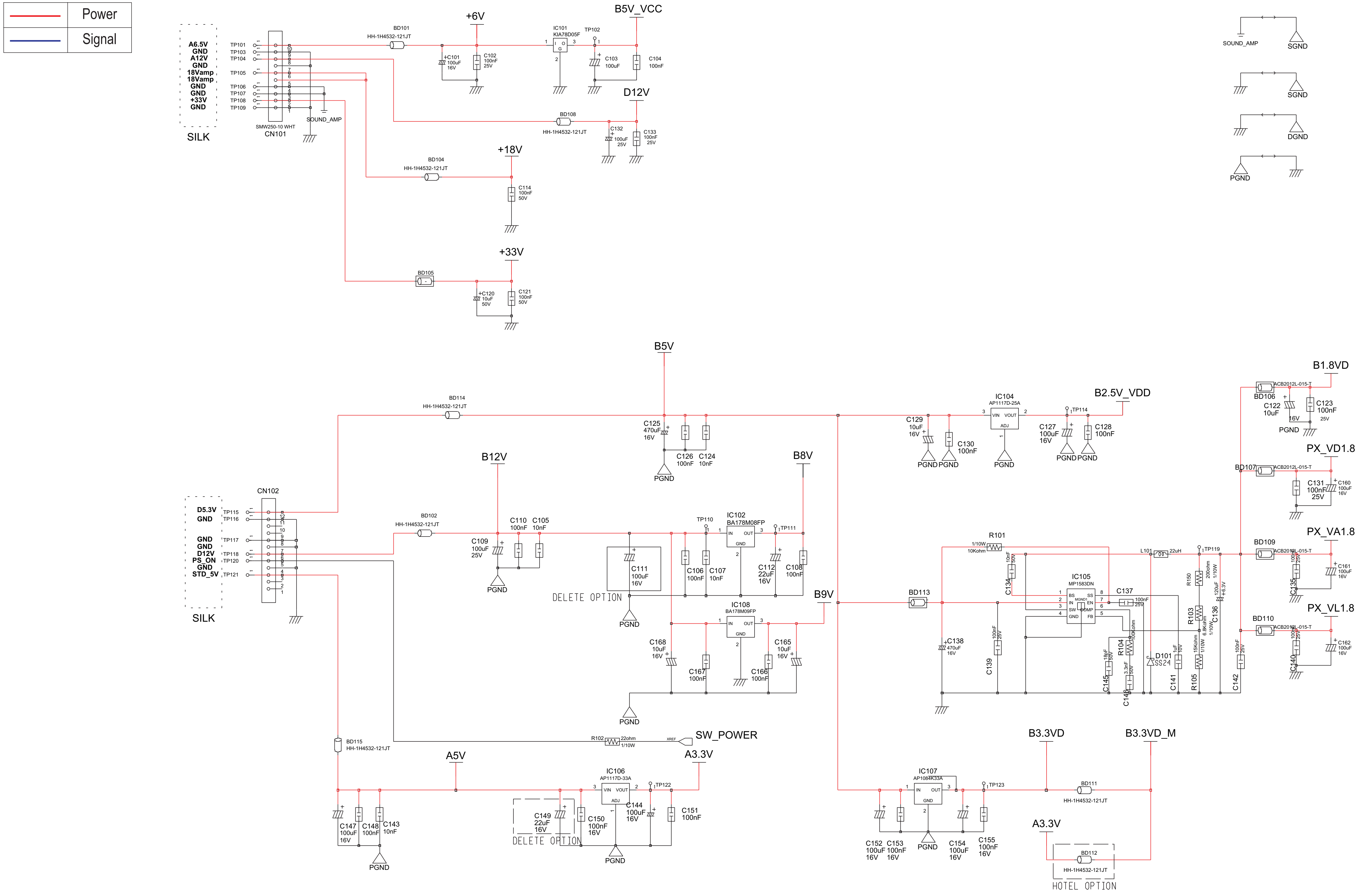
Power
Signal
SILK
A6.5V
GND
A12V
GND
18Vamp
18Vamp
GND
GND
+33V
GND
TP101
TP103
TP104
TP105
TP106
TP107
TP108
TP109
SMW250-10 WHT
CN101
SOUND_AMP
BD101
HH-1H4532-121JT
+6V
C101
100uF
16V
C102
100nF
25V
IC101
KIA78D05F
TP102
B5V_VCC
C103
100uF
C104
100nF
D12V
BD108
HH-1H4532-121JT
C132
100uF
25V
C133
100nF
25V
+18V
BD104
HH-1H4532-121JT
C114
100nF
50V
+33V
BD105
C120
10uF
50V
C121
100nF
50V
SOUND_AMP
SGND
SGND
DGND
PGND
B5V
BD114
HH-1H4532-121JT
C125
470uF
16V
C126
100nF
C124
10nF
PGND
B12V
B8V
CN102
D5.3V
GND
GND
GND
D12V
PS_ON
GND
STD_5V
TP115
TP116
TP117
TP118
TP120
TP121
SILK
BD102
HH-1H4532-121JT
C110
100nF
C105
10nF
C109
100uF
25V
PGND
C111
100uF
16V
DELETE OPTION
PGND
TP110
IC102
BA178M08FP
TP111
C106
100nF
C107
10nF
C112
22uF
16V
C108
100nF
IC108
BA178M09FP
B9V
C168
10uF
16V
C167
100nF
C165
10uF
16V
C166
100nF
PGND
R102
22ohm
1/10W
SW_POWER
BD115
HH-1H4532-121JT
A5V
A3.3V
IC106
AP1117D-33A
TP122
C147
100uF
16V
C148
100nF
C143
10nF
PGND
C149
22uF
16V
C150
100nF
16V
C144
100uF
16V
C151
100nF
DELETE OPTION
PGND
IC104
AP1117D-25A
B2.5V_VDD
TP114
C129
10uF
16V
C130
100nF
PGND
PGND
PGND
C127
100uF
16V
C128
100nF
PGND
PGND
B1.8VD
BD106
ACB2012L-015-T
C122
10uF
16V
C123
100nF
25V
PGND
PX_VD1.8
BD107
ACB2012L-015-T
C131
100nF
25V
C160
100uF
16V
PX_VA1.8
BD109
ACB2012L-015-T
C135
C161
100uF
16V
PX_VL1.8
BD110
ACB2012L-015-T
C140
C162
100uF
16V
R101
1/10W
10Kohm
L101
22uH
TP119
IC105
MP1583DN
C137
100nF
25V
BD113
C138
470uF
16V
C139
C134
C145
C146
R104
D101
SS24
C141
R105
R103
R150
C136
C142
B3.3VD
B3.3VD_M
IC107
AP1084K33A
TP123
BD111
HH-1H4532-121JT
C152
100uF
16V
C153
100nF
16V
PGND
C154
100uF
16V
C155
100nF
16V
A3.3V
BD112
HH-1H4532-121JT
HOTEL OPTION

10-1-2 MICOM

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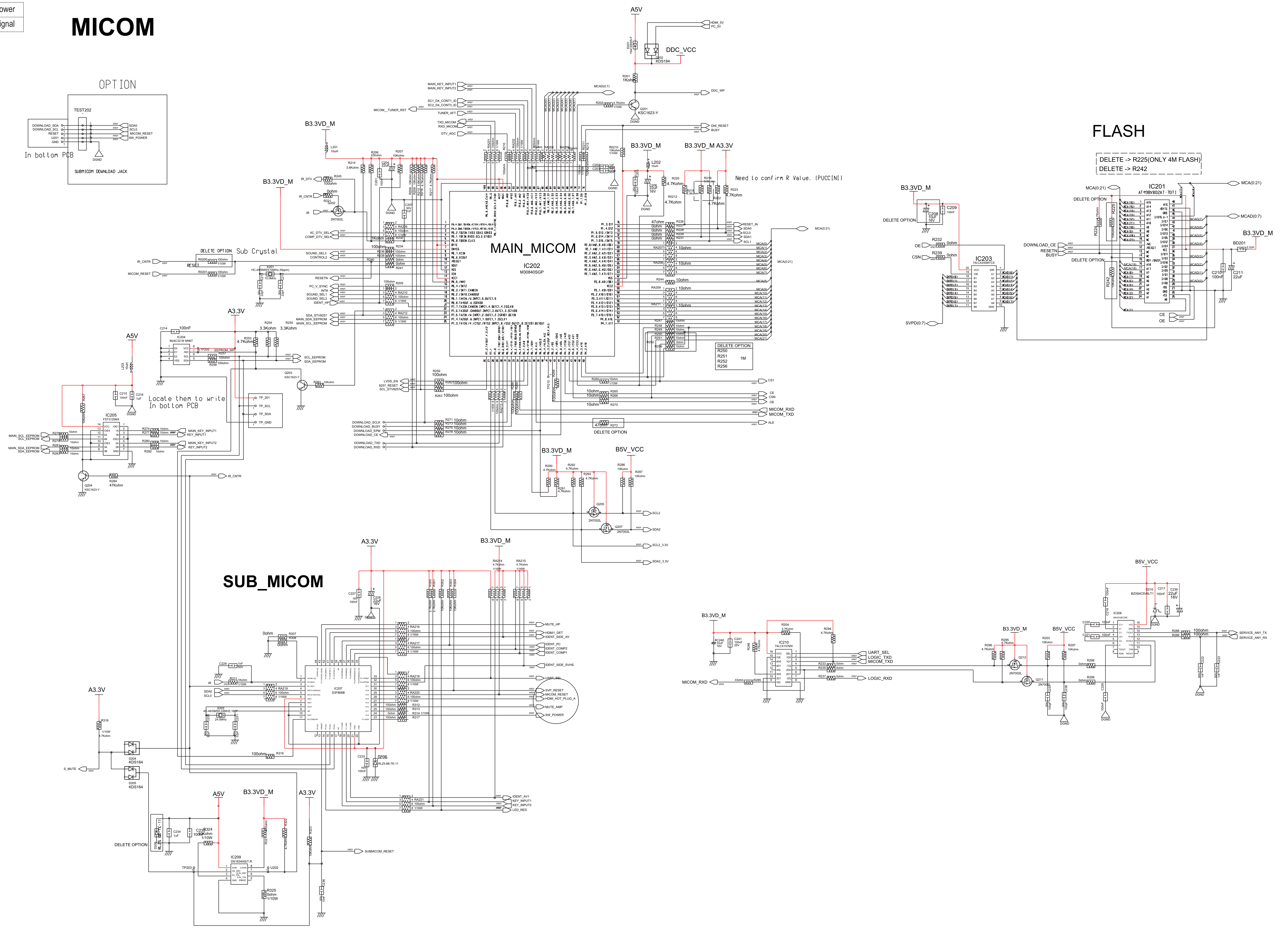
🟥	Power
🟦	Signal


MICOM
OPTION
TEST202
DOWNLOAD_SDA
DOWNLOAD_SCL
RESET
U201
GND
SDA0
SCL0
MICOM_RESET
SW_POWER
In bottom PCB
SUBMICOM DOWNLOAD JACK
DGND
B3.3VD_M
A5V
A3.3V
B5V_VCC
DDC_VCC
KDS184
KSC1623-Y
DDC_WP
DNI_RESET
BUSY
MAIN_MICOM
IC202
M30840SGP
MAIN_KEY_INPUT1
MAIN_KEY_INPUT2
SC1_D4_CONT1_ID
SC2_D4_CONT1_ID
TUNER_AFT
MICOM__TUNER_RST
TXD_MICOM
RXD_MICOM
DTV_AGC
IR_DTV
IR_CNTR
IR
2N7002L
IIC_DTV_SEL
COMP_DTV_SEL
DELETE OPTION
Sub Crystal
SOUND_SEL3
CONTROL2
RESETN
PC_V_SYNC
INTX
SOUND_SEL1
SOUND_SEL2
IDENT_HP
SDA_STV8257
MAIN_SDA_EEPROM
MAIN_SCL_EEPROM
MICOM_RESET
IC204
M24C32-W MN6T
EEPROM_WP
SCL_EEPROM
SDA_EEPROM
Locate them to write
In bottom PCB
TP_201
TP_SCL
TP_SDA
TP_GND
IC205
FST3125MX
MAIN_KEY_INPUT1
KEY_INPUT1
MAIN_KEY_INPUT2
KEY_INPUT2
MAIN_SCL_EEPROM
SCL_EEPROM
MAIN_SDA_EEPROM
SDA_EEPROM
Q204
KSC1623-Y
IR_CNTR
LVDS_EN
8257_RESET
SCL_STV8257
DOWNLOAD_SCLK
DOWNLOAD_BUSY
DOWNLOAD_EPM
DOWNLOAD_CE
DOWNLOAD_TXD
DOWNLOAD_RXD
CS1
CE
CSN
OE
MICOM_RXD
MICOM_TXD
ALE
DELETE OPTION
R250
R251
R252
R256
1M
RESET_IN
SDA0
SCL0
SDA1
SCL1
MCA(0:21)
MCAD(0:7)
Need to confirm R Value. [PUCCINI]
SCL2
SDA2
SCL2_3.3V
SDA2_3.3V
Q205
Q207
2N7002L
FLASH
DELETE -> R225(ONLY 4M FLASH)
DELETE -> R242
IC201
AT49BV802AT-70TI
IC203
74LCX245MTCX
DOWNLOAD_CE
RESETN
BUSY
SVPD(0:7)
BD201
C210 100nF
C211 22uF
SUB_MICOM
IC207
S3F866B
MUTE_HP
HDMI1_DET
IDENT_SIDE_AV
IDENT_PC
IDENT_COMP2
IDENT_COMP1
IDENT_SIDE_SVHS
UART_SEL
SVP_RESET
MICOM_RESET
HDMI_HOT_PLUG_A
MUTE_AMP
SW_POWER
SDA0
SCL0
IR
D206
RLZ5.6B-TE-11
D204
KDS184
D205
KDS184
S_MUTE
IDENT_AV1
KEY_INPUT1
KEY_INPUT2
LED_RED
IC209
DS1834AS/T-R
U202
TP203
SUBMICOM_RESET
DELETE OPTION
IC210
74LCX157MX
UART_SEL
LOGIC_TXD
MICOM_TXD
LOGIC_RXD
MICOM_RXD
IC206
MAX3232CWE
SERVICE_ANY_TX
SERVICE_ANY_RX
Q211
Q212
2N7002L
BZX84C5V6LT1

10-1-3 IN_OUT_JACK

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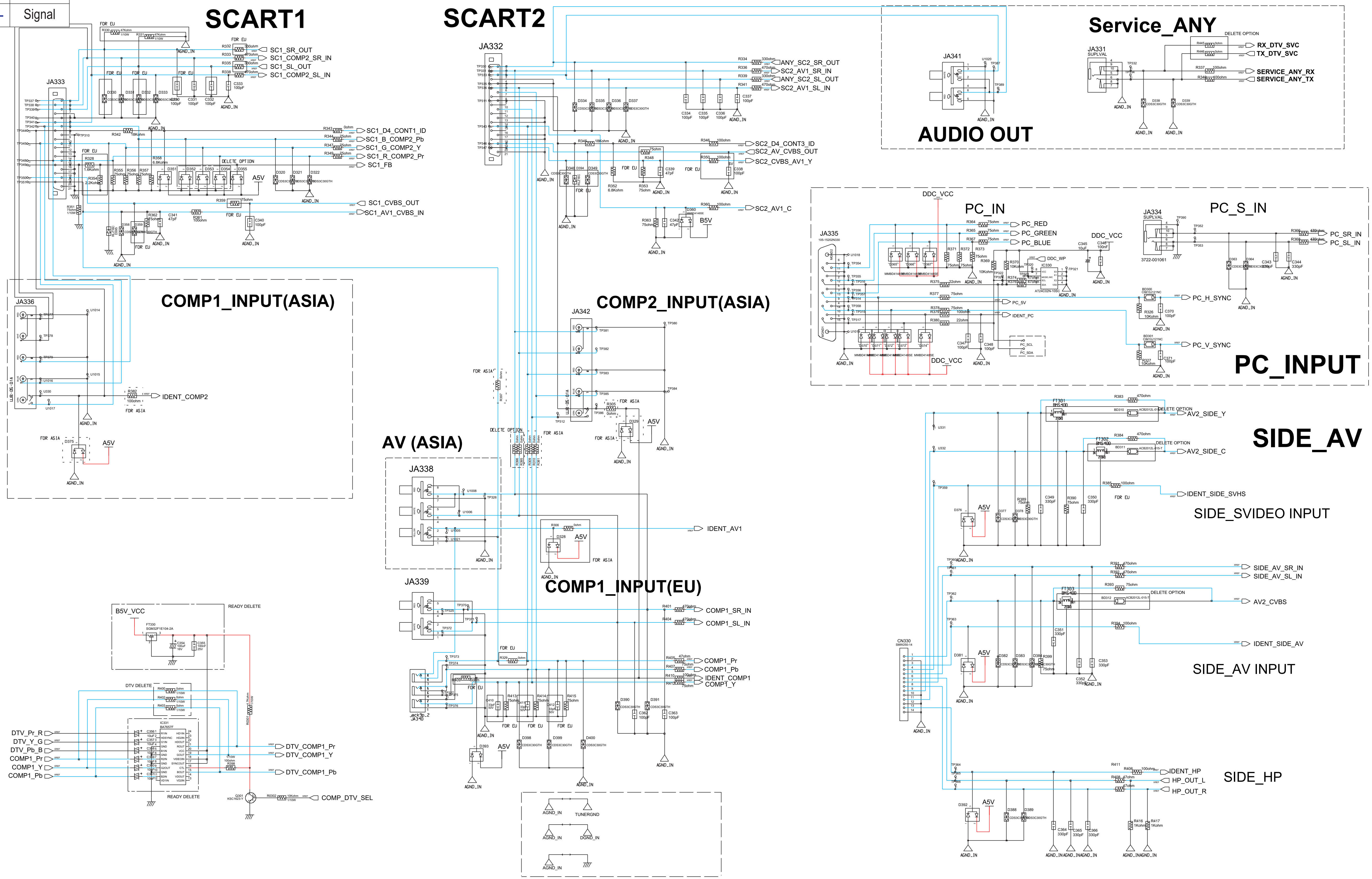
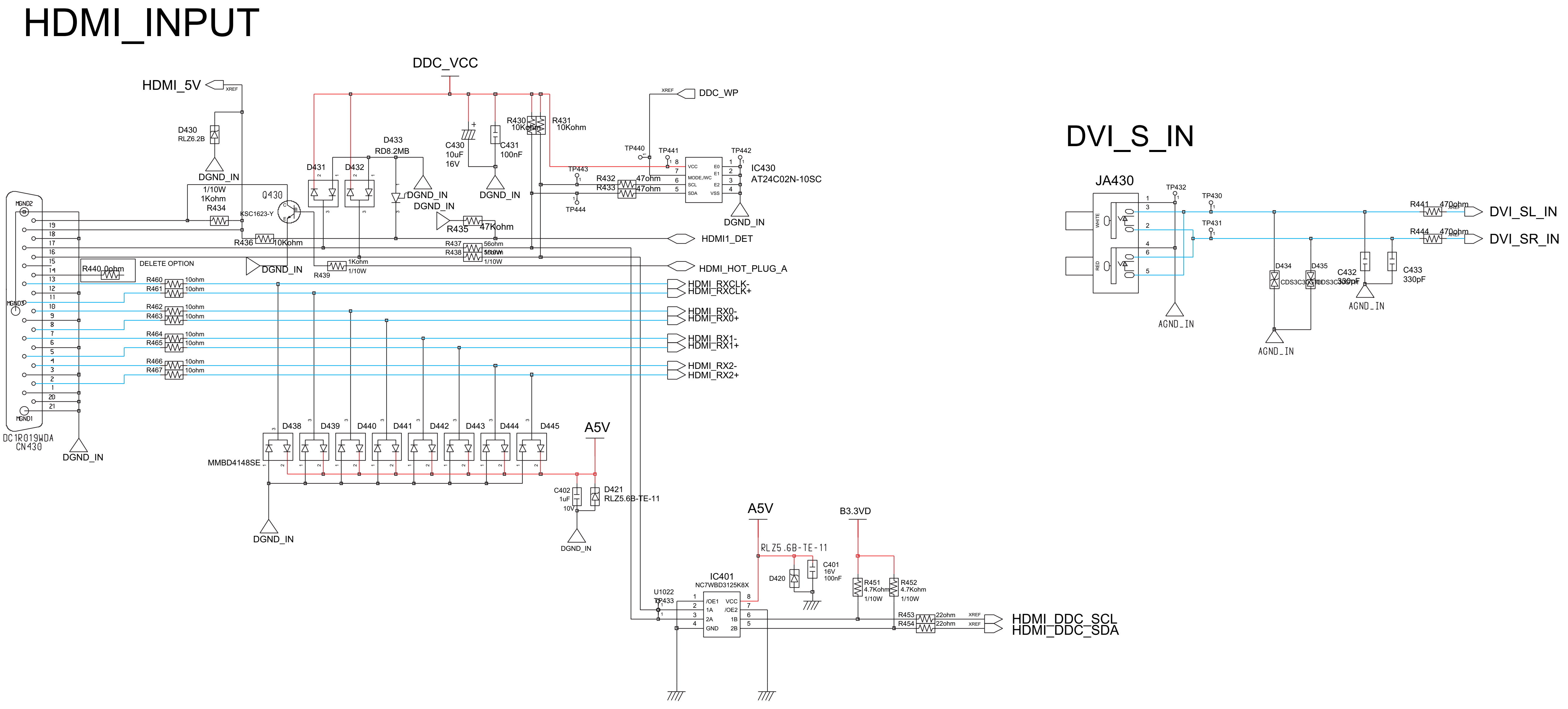
🟥	Power
🟦	Signal


SCART1
JA333
SC1_SR_OUT
SC1_COMP2_SR_IN
SC1_SL_OUT
SC1_COMP2_SL_IN
SC1_D4_CONT1_ID
SC1_B_COMP2_Pb
SC1_G_COMP2_Y
SC1_R_COMP2_Pr
SC1_FB
SC1_CVBS_OUT
SC1_AV1_CVBS_IN
FOR EU
AGND_IN
A5V
DELETE OPTION
SCART2
JA332
ANY_SC2_SR_OUT
SC2_AV1_SR_IN
ANY_SC2_SL_OUT
SC2_AV1_SL_IN
SC2_D4_CONT3_ID
SC2_AV_CVBS_OUT
SC2_CVBS_AV1_Y
SC2_AV1_C
B5V
AUDIO OUT
JA341
Service_ANY
JA331
RX_DTV_SVC
TX_DTV_SVC
SERVICE_ANY_RX
SERVICE_ANY_TX
COMP1_INPUT(ASIA)
JA336
IDENT_COMP2
FOR ASIA
COMP2_INPUT(ASIA)
JA342
AV (ASIA)
JA338
IDENT_AV1
JA339
COMP1_INPUT(EU)
COMP1_SR_IN
COMP1_SL_IN
COMP1_Pr
COMP1_Pb
IDENT_COMP1
COMP1_Y
JA340
B5V_VCC
READY DELETE
DTV DELETE
IC331
DTV_Pr_R
DTV_Y_G
DTV_Pb_B
COMP1_Pr
COMP1_Y
COMP1_Pb
DTV_COMP1_Pr
DTV_COMP1_Y
DTV_COMP1_Pb
COMP_DTV_SEL
AGND_IN
TUNERGND
DGND_IN
PC_INPUT
DDC_VCC
PC_IN
JA335
PC_RED
PC_GREEN
PC_BLUE
DDC_WP
PC_5V
IDENT_PC
PC_SCL
PC_SDA
PC_H_SYNC
PC_V_SYNC
PC_S_IN
JA334
PC_SR_IN
PC_SL_IN
SIDE_AV
AV2_SIDE_Y
AV2_SIDE_C
IDENT_SIDE_SVHS
SIDE_SVIDEO INPUT
SIDE_AV_SR_IN
SIDE_AV_SL_IN
AV2_CVBS
IDENT_SIDE_AV
SIDE_AV INPUT
CN330
SIDE_HP
IDENT_HP
HP_OUT_L
HP_OUT_R

10-1-4 HDMI

This Document can not be used without Samsung's authorization.

🟥	Power
🟦	Signal


HDMI_INPUT
DDC_VCC
HDMI_5V
DDC_WP
D430 RLZ6.2B
DGND_IN
D433 RD8.2MB
D431
D432
C430 10uF 16V
C431 100nF
R430 10Kohm
R431 10Kohm
TP440
TP441
TP442
TP443
TP444
R432 47ohm
R433 47ohm
IC430 AT24C02N-10SC
1/10W 1Kohm R434
Q430 KSC1623-Y
R435 47Kohm
R436 10Kohm
R437 56ohm
R438 1/10W
R439 1Kohm 1/10W
R440 0ohm
DELETE OPTION
HDMI1_DET
HDMI_HOT_PLUG_A
R460 10ohm
R461 10ohm
R462 10ohm
R463 10ohm
R464 10ohm
R465 10ohm
R466 10ohm
R467 10ohm
HDMI_RXCLK-
HDMI_RXCLK+
HDMI_RX0-
HDMI_RX0+
HDMI_RX1-
HDMI_RX1+
HDMI_RX2-
HDMI_RX2+
DC1R019WDA CN430
D438
D439
D440
D441
D442
D443
D444
D445
MMBD4148SE
A5V
C402 1uF 10V
D421 RLZ5.6B-TE-11
A5V
B3.3VD
RLZ5.6B-TE-11
D420
C401 16V 100nF
IC401 NC7WBD3125K8X
U1022
TP433
R451 4.7Kohm 1/10W
R452 4.7Kohm 1/10W
R453 22ohm
R454 22ohm
HDMI_DDC_SCL
HDMI_DDC_SDA
DVI_S_IN
JA430
TP432
TP430
TP431
R441 470ohm
R444 470ohm
DVI_SL_IN
DVI_SR_IN
D434
D435
CDS3C30GTH
C432 330pF
C433 330pF
AGND_IN

10-1-5 SOUND

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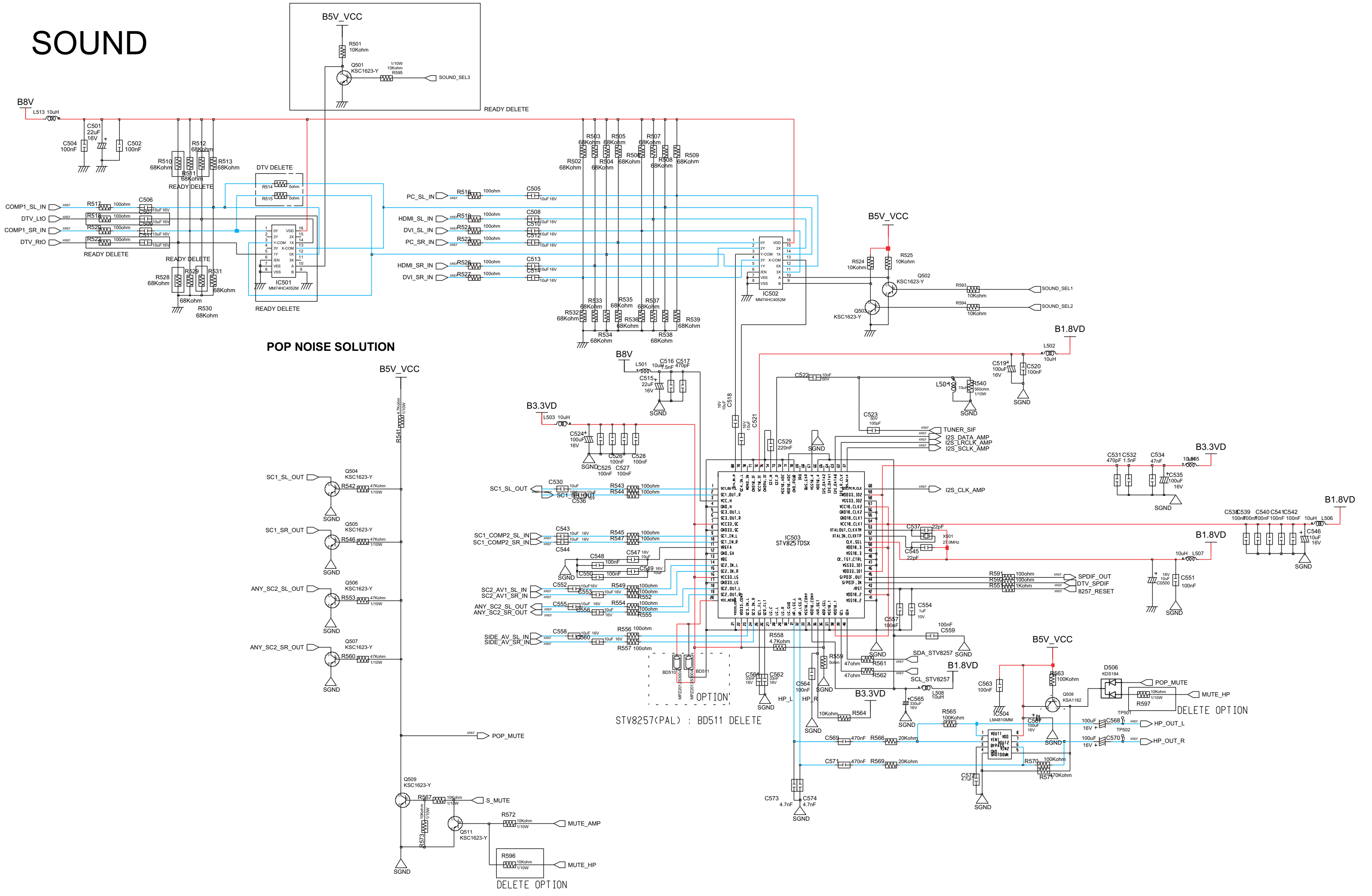
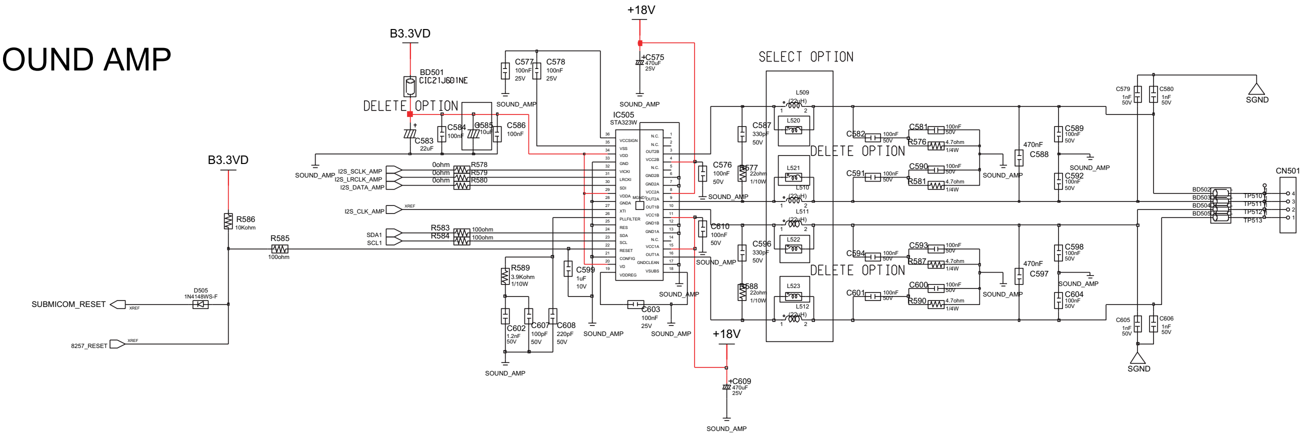
—	Power
—	Signal

SOUND


B5V_VCC
R501 10Kohm
Q501 KSC1623-Y
SOUND_SEL3
READY DELETE
B8V
L513 10uH
DTV DELETE
COMP1_SL_IN
DTV_LtO
COMP1_SR_IN
DTV_RtO
IC501 MM74HC4052M
PC_SL_IN
HDMI_SL_IN
DVI_SL_IN
PC_SR_IN
HDMI_SR_IN
DVI_SR_IN
IC502 MM74HC4052M
B5V_VCC
Q502 KSC1623-Y
Q503 KSC1623-Y
SOUND_SEL1
SOUND_SEL2
B1.8VD
POP NOISE SOLUTION
B5V_VCC
B8V
B3.3VD
TUNER_SIF
I2S_DATA_AMP
I2S_LRCLK_AMP
I2S_SCLK_AMP
I2S_CLK_AMP
IC503 STV8257DSX
SC1_SL_OUT
SC1_SR_OUT
ANY_SC2_SL_OUT
ANY_SC2_SR_OUT
SC1_COMP2_SL_IN
SC1_COMP2_SR_IN
SC2_AV1_SL_IN
SC2_AV1_SR_IN
SIDE_AV_SL_IN
SIDE_AV_SR_IN
SPDIF_OUT
DTV_SPDIF
8257_RESET
SDA_STV8257
SCL_STV8257
OPTION
STV8257(PAL) : BD511 DELETE
B5V_VCC
D506 KDS184
POP_MUTE
MUTE_HP
DELETE OPTION
IC504 LM4810MM
HP_OUT_L
HP_OUT_R
POP_MUTE
Q509 KSC1623-Y
S_MUTE
MUTE_AMP
Q511 KSC1623-Y
MUTE_HP
DELETE OPTION
SGND

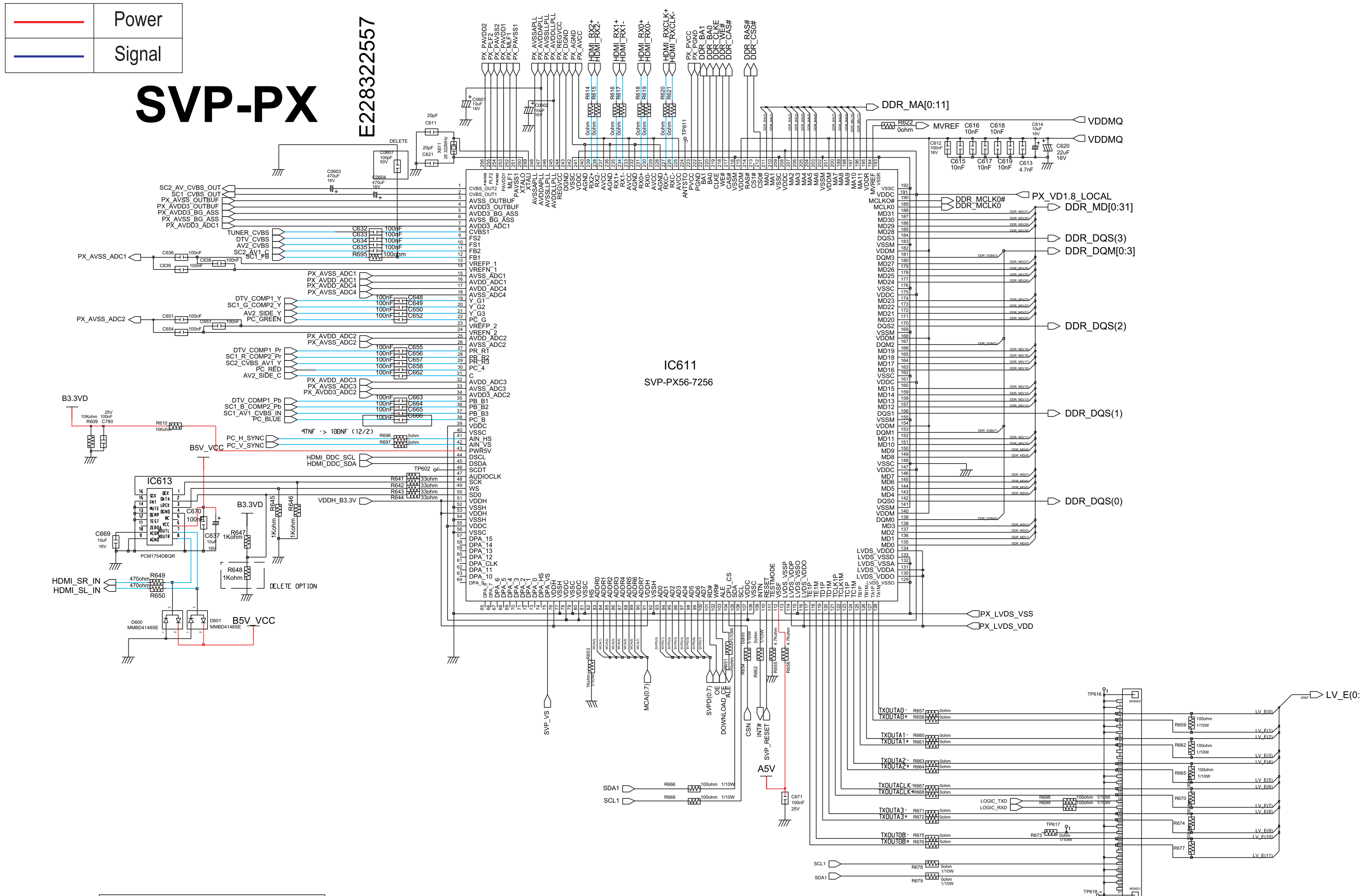
SOUND AMP

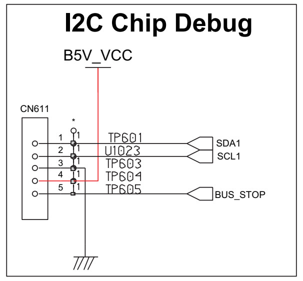

+18V
B3.3VD
BD501 CIC21J601NE
DELETE OPTION
IC505 STA323W
SOUND_AMP
I2S_SCLK_AMP
I2S_LRCLK_AMP
I2S_DATA_AMP
I2S_CLK_AMP
SDA1
SCL1
B3.3VD
SUBMICOM_RESET
8257_RESET
SELECT OPTION
DELETE OPTION
DELETE OPTION
+18V
CN501
SGND

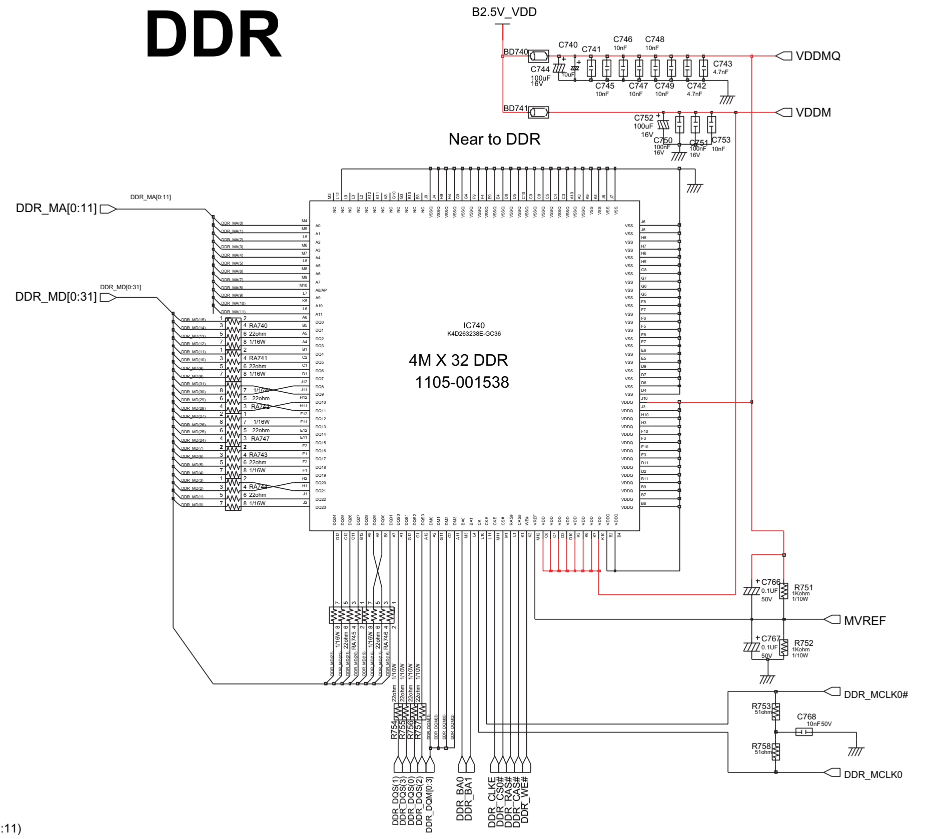
10-1-6 SVP-PX

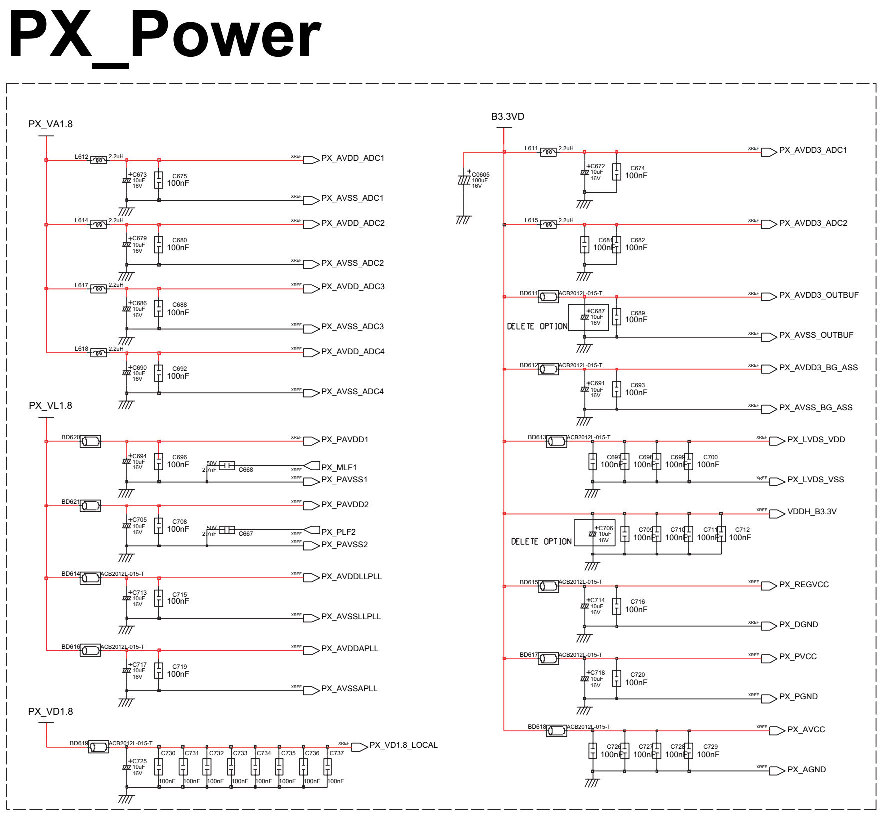
This Document can not be used without Samsung's authorization.

—	Power
—	Signal


SVP-PX
E228322557
IC611
SVP-PX56-7256
IC613
PCM1754DBQR
B3.3VD
B5V_VCC
VDDH_B3.3V
HDMI_SR_IN
HDMI_SL_IN
PX_AVSS_ADC1
PX_AVSS_ADC2
DDR_MA[0:11]
VDDMQ
MVREF
PX_VD1.8_LOCAL
DDR_MD[0:31]
DDR_DQS(3)
DDR_DQM[0:3]
DDR_DQS(2)
DDR_DQS(1)
DDR_DQS(0)
PX_LVDS_VSS
PX_LVDS_VDD
LV_E(0:11)
CN612
A5V
SDA1
SCL1
DELETE OPTION
47NF -> 100NF (12/2)


I2C Chip Debug
B5V_VCC
CN611
TP601
U1023
TP603
TP604
TP605
SDA1
SCL1
BUS_STOP


DDR
B2.5V_VDD
VDDMQ
VDDM
Near to DDR
DDR_MA[0:11]
DDR_MD[0:31]
IC740
4M X 32 DDR
1105-001538
MVREF
DDR_MCLK0#
DDR_MCLK0


PX_Power
PX_VA1.8
PX_AVDD_ADC1
PX_AVSS_ADC1
PX_AVDD_ADC2
PX_AVSS_ADC2
PX_AVDD_ADC3
PX_AVSS_ADC3
PX_AVDD_ADC4
PX_AVSS_ADC4
PX_VL1.8
PX_PAVDD1
PX_MLF1
PX_PAVSS1
PX_PAVDD2
PX_PLF2
PX_PAVSS2
PX_AVDDLLPLL
PX_AVSSLLPLL
PX_AVDDAPLL
PX_AVSSAPLL
PX_VD1.8
PX_VD1.8_LOCAL
B3.3VD
PX_AVDD3_ADC1
PX_AVDD3_ADC2
PX_AVDD3_OUTBUF
PX_AVSS_OUTBUF
PX_AVDD3_BG_ASS
PX_AVSS_BG_ASS
PX_LVDS_VDD
PX_LVDS_VSS
VDDH_B3.3V
PX_REGVCC
PX_DGND
PX_PVCC
PX_PGND
PX_AVCC
PX_AGND
DELETE OPTION

10-1-7 TUNER

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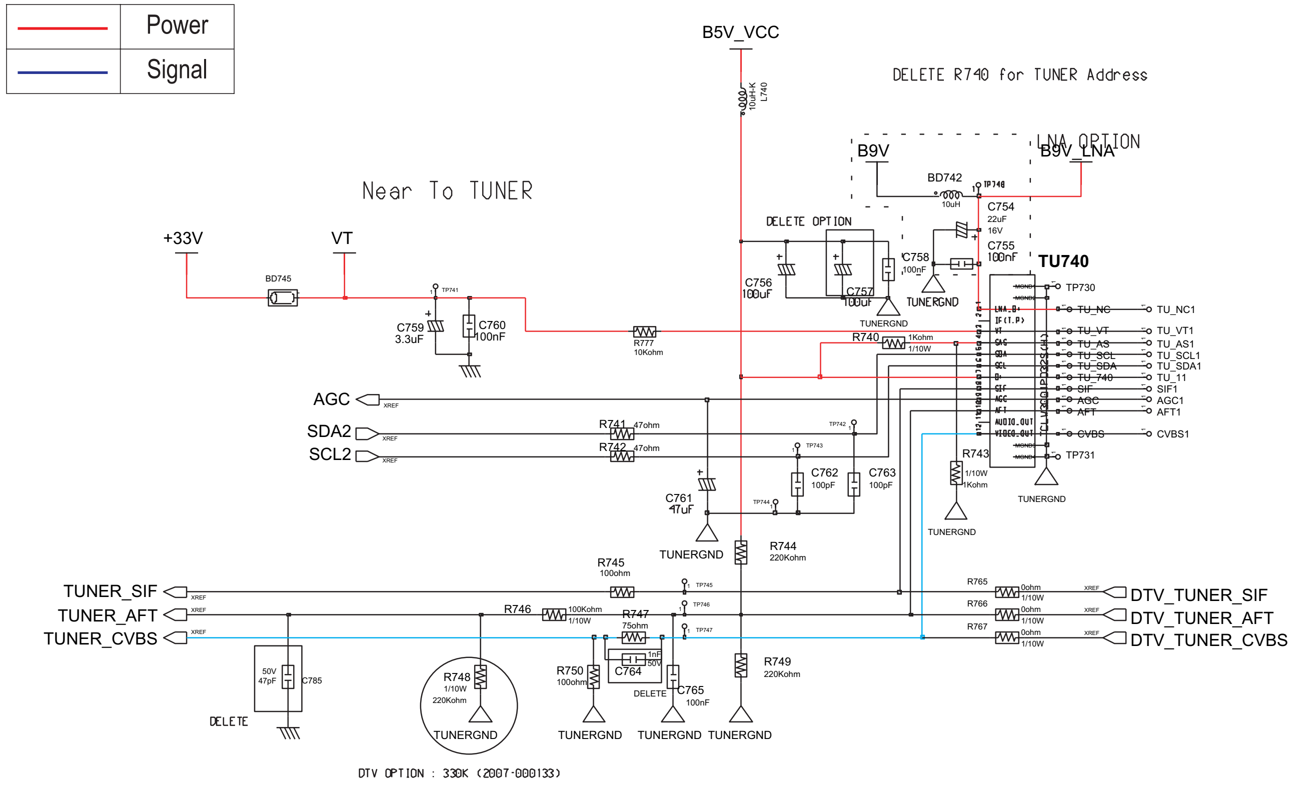
—	Power
—	Signal


B5V_VCC
DELETE R740 for TUNER Address
LNA OPTION
B9V
B9V_LNA
Near To TUNER
+33V
VT
BD745
C759 3.3uF
C760 100nF
R777 10Kohm
BD742 10uH
DELETE OPTION
C754 22uF 16V
C755 100nF
C756 100uF
C757 100uF
C758 100nF
TUNERGND
TU740
TP730
TU_NC1
TU_VT1
TU_AS1
TU_SCL1
TU_SDA1
TU_11
SIF1
AGC1
AFT1
CVBS1
TP731
R740 1Kohm 1/10W
AGC
SDA2
SCL2
R741 47ohm
R742 47ohm
C761 47uF
C762 100pF
C763 100pF
R743 1Kohm 1/10W
R744 220Kohm
R745 100ohm
TUNER_SIF
TUNER_AFT
TUNER_CVBS
R746 100Kohm 1/10W
R747 75ohm
R765 0ohm 1/10W
R766 0ohm 1/10W
R767 0ohm 1/10W
DTV_TUNER_SIF
DTV_TUNER_AFT
DTV_TUNER_CVBS
C785
DELETE
R748 1/10W 220Kohm
R750 100ohm
C764
C765 100nF
R749 220Kohm
DTV OPTION : 330K (2007-000133)

10-1-8 FUNCTION

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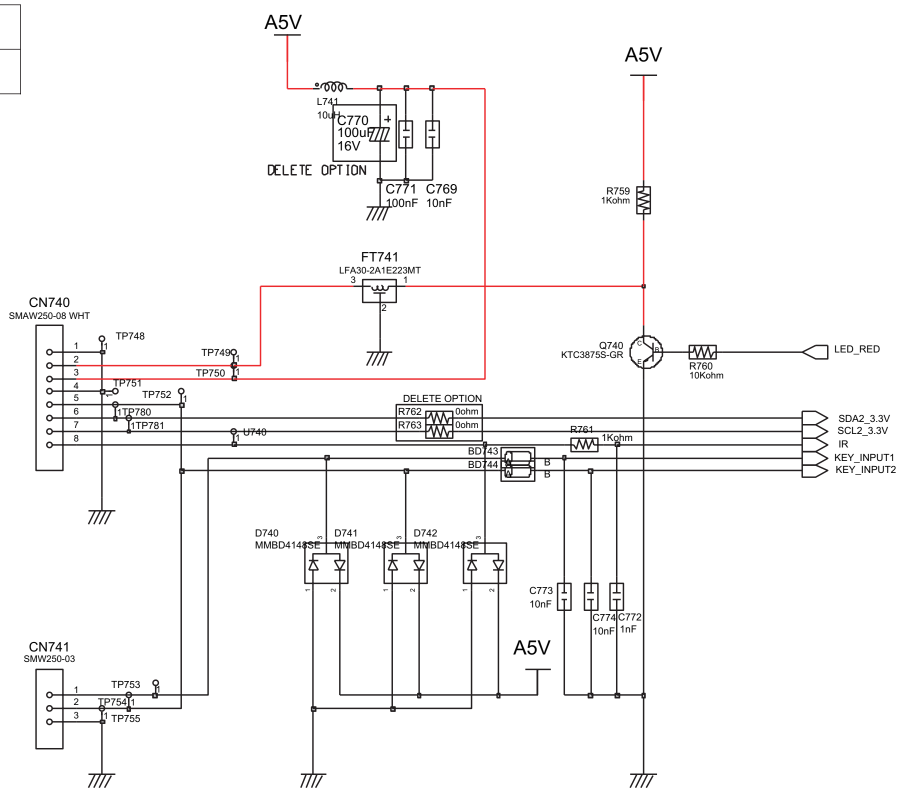
—	Power
—	Signal


A5V
L741 10uH
C770 100uF 16V
DELETE OPTION
C771 100nF
C769 10nF
A5V
R759 1Kohm
FT741
LFA30-2A1E223MT
CN740
SMAW250-08 WHT
TP748
TP749
TP750
TP751
TP752
TP780
TP781
U740
Q740
KTC3875S-GR
R760 10Kohm
LED_RED
DELETE OPTION
R762 0ohm
R763 0ohm
R761 1Kohm
BD743
BD744
SDA2_3.3V
SCL2_3.3V
IR
KEY_INPUT1
KEY_INPUT2
D740 MMBD4148SE
D741 MMBD4148SE
D742 MMBD4148SE
C773 10nF
C774 10nF
C772 1nF
A5V
CN741
SMW250-03
TP753
TP754
TP755

10-1-9 FBE_Option

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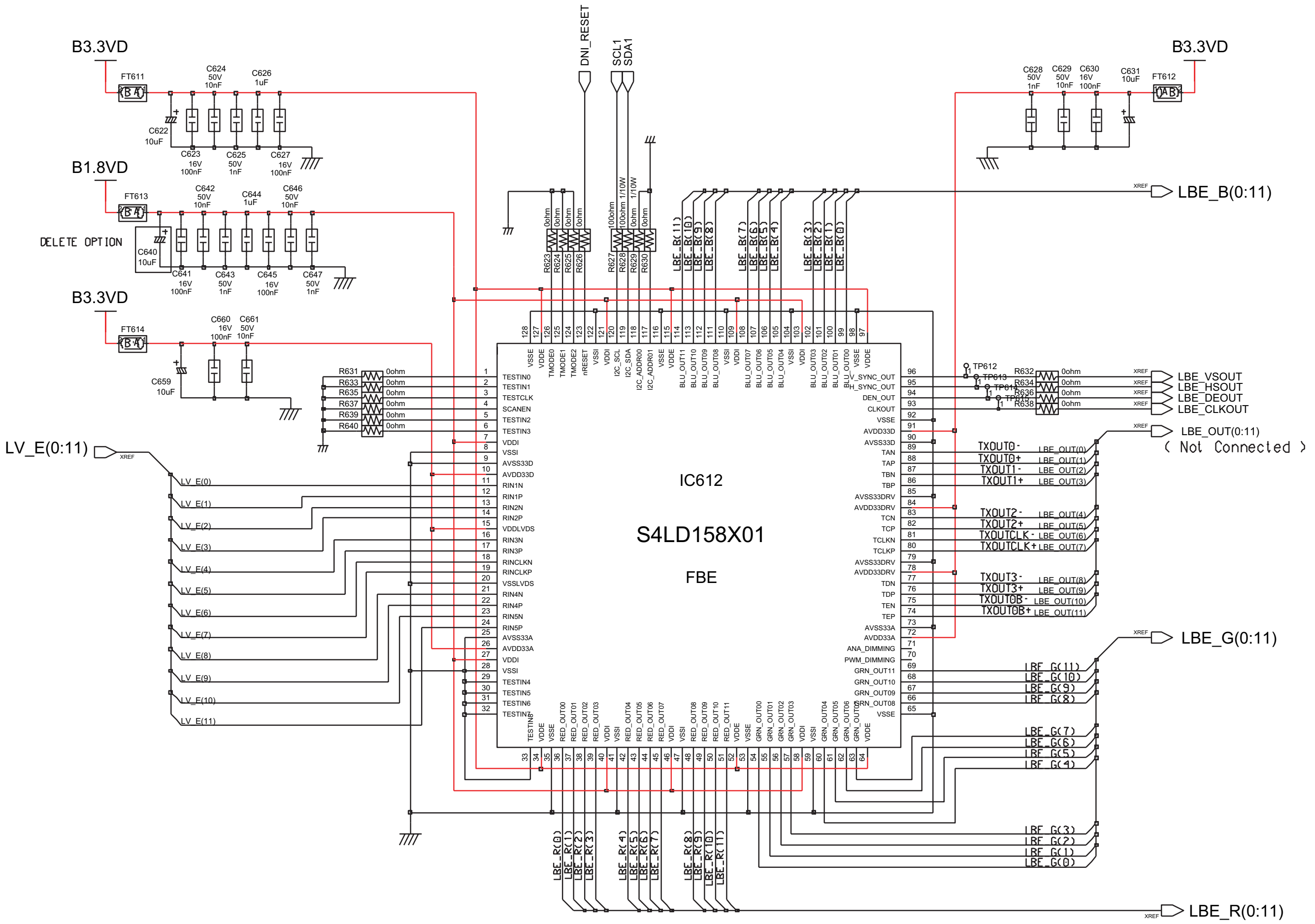
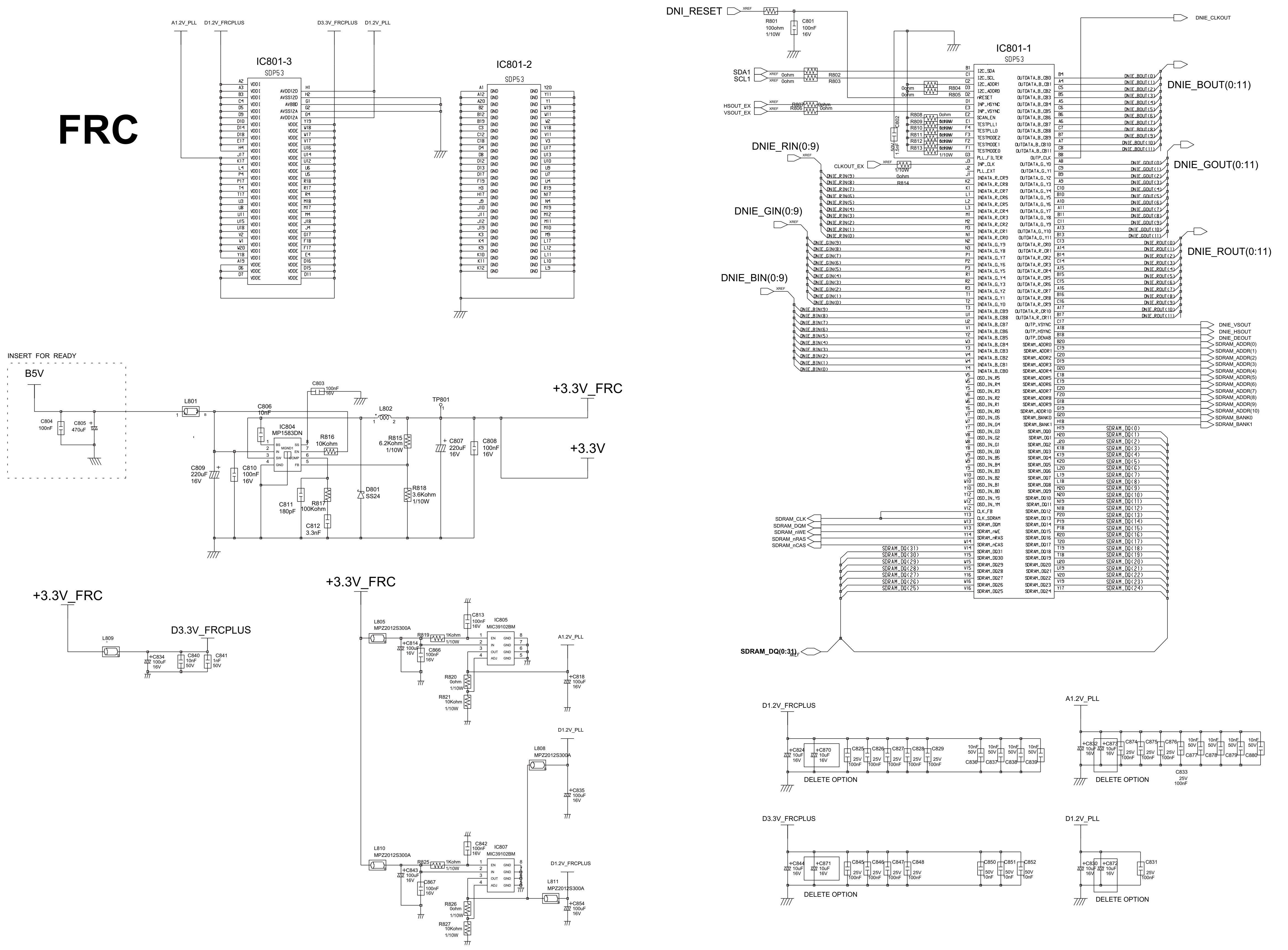
—	Power
—	Signal


B3.3VD
FT611
C622 10uF
C623 16V 100nF
C624 50V 10nF
C625 50V 1nF
C626 1uF
C627 16V 100nF
B1.8VD
FT613
DELETE OPTION
C640 10uF
C641 16V 100nF
C642 50V 10nF
C643 50V 1nF
C644 1uF
C645 16V 100nF
C646 50V 10nF
C647 50V 1nF
B3.3VD
FT614
C659 10uF
C660 16V 100nF
C661 50V 10nF
DNI_RESET
SCL1
SDA1
B3.3VD
C628 50V 1nF
C629 50V 10nF
C630 16V 100nF
C631 10uF
FT612
LBE_B(0:11)
LV_E(0:11)
R631 R633 R635 R637 R639 R640 0ohm
IC612
S4LD158X01
FBE
TP612
R632 R634 R636 R638 0ohm
LBE_VSOUT
LBE_HSOUT
LBE_DEOUT
LBE_CLKOUT
LBE_OUT(0:11)
(Not Connected)
TXOUT0-
TXOUT0+
TXOUT1-
TXOUT1+
TXOUT2-
TXOUT2+
TXOUTCLK-
TXOUTCLK+
TXOUT3-
TXOUT3+
TXOUTOB-
TXOUTOB+
LBE_G(0:11)
LBE_R(0:11)

10-1-10 FRC

This Document can not be used without Samsung's authorization.


FRC
A1.2V_PLL
D1.2V_FRCPLUS
D3.3V_FRCPLUS
D1.2V_PLL
IC801-3
SDP53
IC801-2
SDP53
IC801-1
SDP53
DNI_RESET
R801
100ohm
1/10W
C801
100nF
16V
SDA1
SCL1
R802
R803
HSOUT_EX
VSOUT_EX
R804
R805
R806
R807
C802
R808
R809
R810
R811
R812
R813
CLKOUT_EX
R814
DNIE_RIN(0:9)
DNIE_GIN(0:9)
DNIE_BIN(0:9)
DNIE_CLKOUT
DNIE_BOUT(0:11)
DNIE_GOUT(0:11)
DNIE_ROUT(0:11)
DNIE_VSOUT
DNIE_HSOUT
DNIE_DEOUT
SDRAM_ADDR(0)
SDRAM_ADDR(1)
SDRAM_ADDR(2)
SDRAM_ADDR(3)
SDRAM_ADDR(4)
SDRAM_ADDR(5)
SDRAM_ADDR(6)
SDRAM_ADDR(7)
SDRAM_ADDR(8)
SDRAM_ADDR(9)
SDRAM_ADDR(10)
SDRAM_BANK0
SDRAM_BANK1
SDRAM_CLK
SDRAM_DQM
SDRAM_nWE
SDRAM_nRAS
SDRAM_nCAS
SDRAM_DQ(0:31)
INSERT FOR READY
B5V
C804
100nF
C805
470uF
L801
C803
100nF
16V
C806
10nF
IC804
MP1583DN
L802
TP801
+3.3V_FRC
+3.3V
R816
10Kohm
R815
6.2Kohm
1/10W
C807
220uF
16V
C808
100nF
16V
C809
220uF
16V
C810
100nF
16V
C811
180pF
R817
100Kohm
C812
3.3nF
D801
SS24
R818
3.6Kohm
1/10W
+3.3V_FRC
L809
D3.3V_FRCPLUS
C834
100uF
16V
C840
10nF
50V
C841
1nF
50V
+3.3V_FRC
L805
MPZ2012S300A
R819
1Kohm
1/10W
C813
100nF
16V
IC805
MIC39102BM
C814
100uF
16V
C866
100nF
16V
R820
0ohm
1/10W
R821
10Kohm
1/10W
A1.2V_PLL
C818
100uF
16V
D1.2V_PLL
L808
MPZ2012S300A
C835
100uF
16V
L810
MPZ2012S300A
R825
1Kohm
1/10W
C842
100nF
16V
IC807
MIC39102BM
C843
100uF
16V
C867
100nF
16V
R826
0ohm
1/10W
R827
10Kohm
1/10W
D1.2V_FRCPLUS
L811
MPZ2012S300A
C854
100uF
16V
D1.2V_FRCPLUS
C824
C870
C825
C826
C827
C828
C829
C836
C837
C838
C839
DELETE OPTION
A1.2V_PLL
C832
C873
C874
C875
C876
C877
C878
C879
C880
C833
DELETE OPTION
D3.3V_FRCPLUS
C844
C871
C845
C846
C847
C848
C850
C851
C852
DELETE OPTION
D1.2V_PLL
C830
C872
C831
DELETE OPTION

10-1-11 FRC Memory

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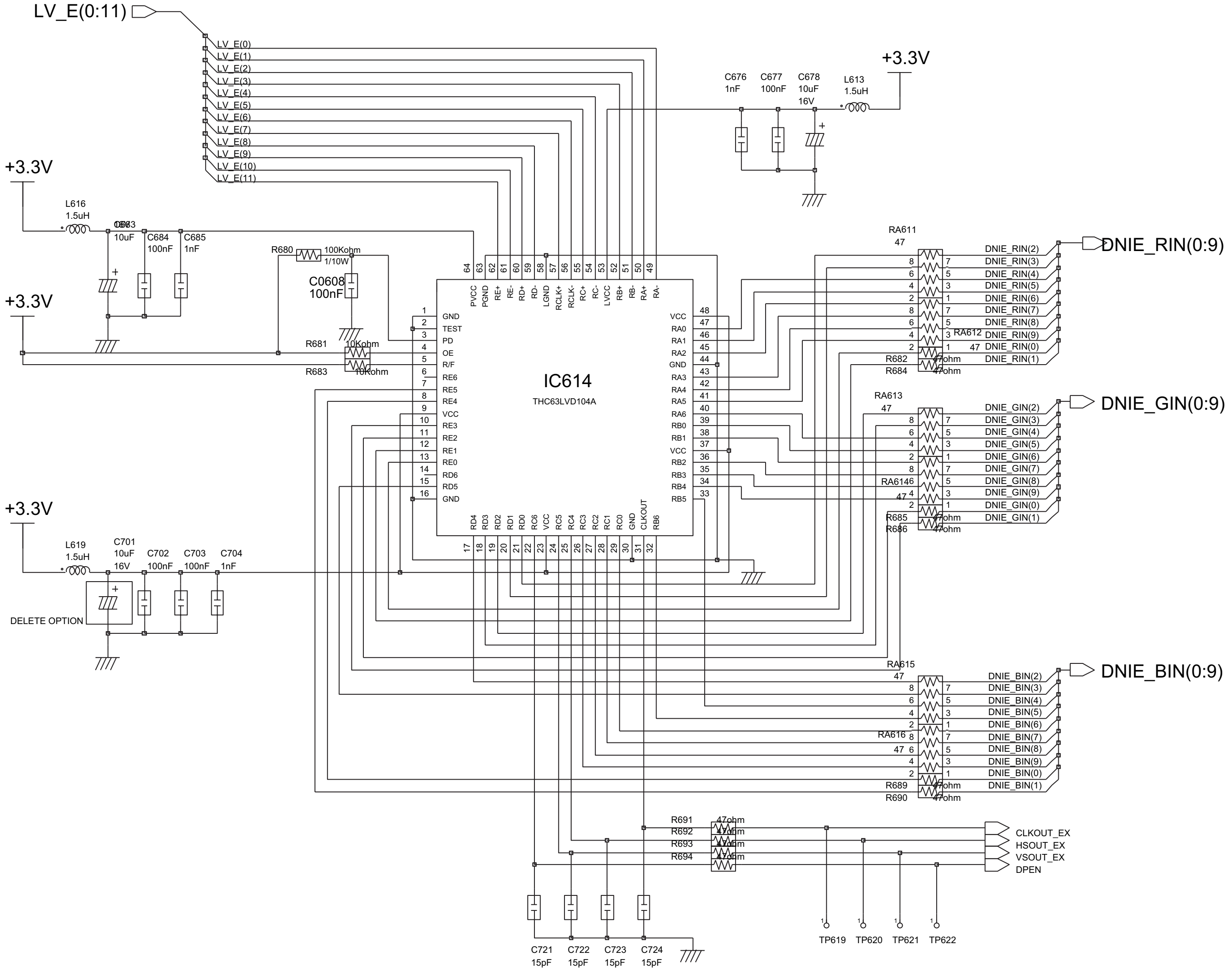
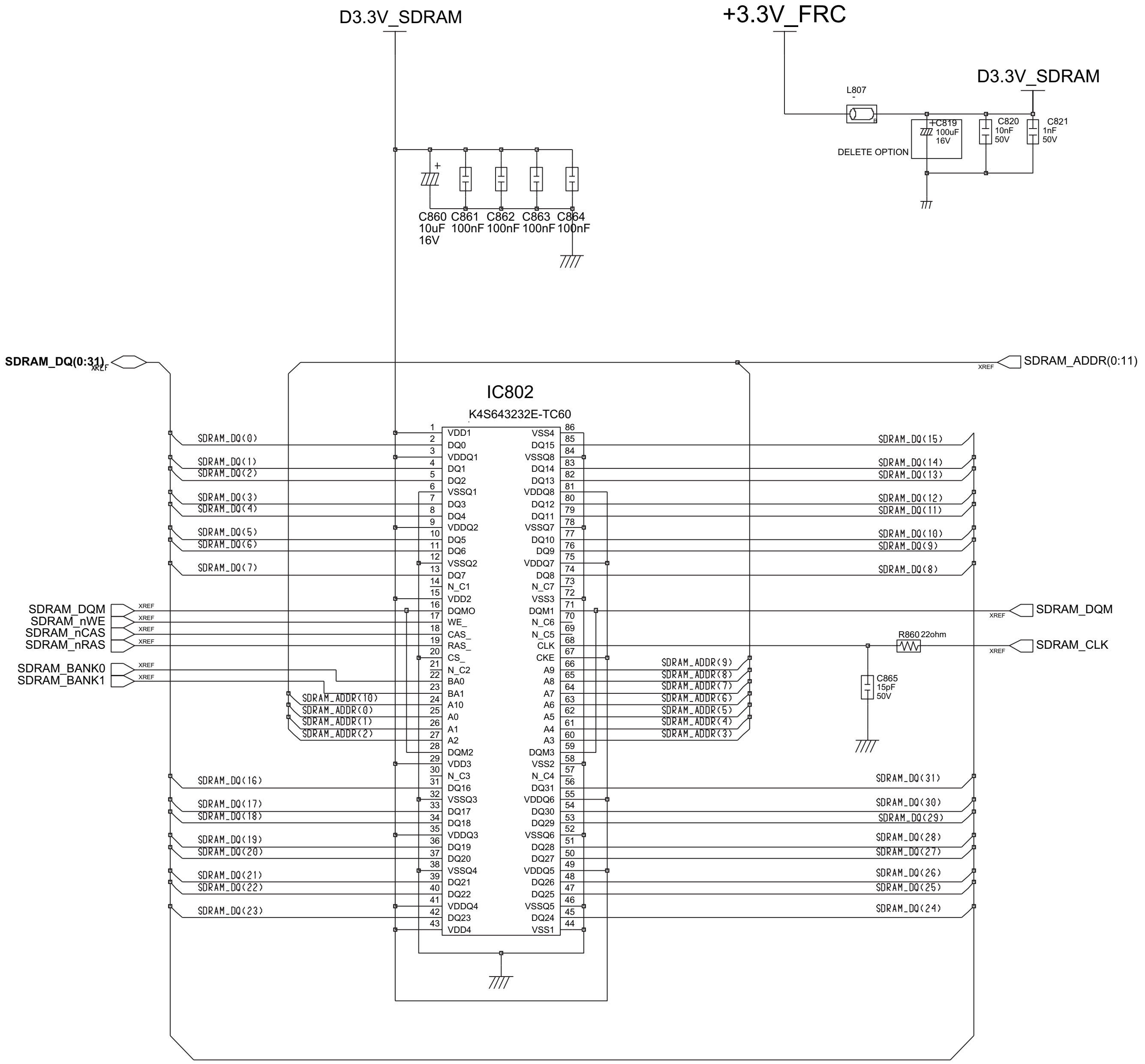
LVDS RX (FOR FRC)


LV_E(0:11)
+3.3V
L616 1.5uH
C683 10uF
C684 100nF
C685 1nF
R680 100Kohm 1/10W
C0608 100nF
R681 10Kohm
R683 10Kohm
C676 1nF
C677 100nF
C678 10uF 16V
L613 1.5uH
IC614
THC63LVD104A
RA611 47
RA612
RA613 47
RA614 47
RA615 47
RA616 47
R682 47ohm
R684 47ohm
R685 47ohm
R686 47ohm
R689 47ohm
R690 47ohm
DNIE_RIN(0:9)
DNIE_GIN(0:9)
DNIE_BIN(0:9)
L619 1.5uH
C701 10uF 16V
C702 100nF
C703 100nF
C704 1nF
DELETE OPTION
R691 47ohm
R692 47ohm
R693 47ohm
R694 47ohm
CLKOUT_EX
HSOUT_EX
VSOUT_EX
DPEN
C721 15pF
C722 15pF
C723 15pF
C724 15pF
TP619
TP620
TP621
TP622

FRC Memory


D3.3V_SDRAM
+3.3V_FRC
D3.3V_SDRAM
L807
C819 100uF 16V
C820 10nF 50V
C821 1nF 50V
DELETE OPTION
C860 10uF 16V
C861 100nF
C862 100nF
C863 100nF
C864 100nF
SDRAM_DQ(0:31)
SDRAM_ADDR(0:11)
IC802
K4S643232E-TC60
SDRAM_DQM
SDRAM_nWE
SDRAM_nCAS
SDRAM_nRAS
SDRAM_BANK0
SDRAM_BANK1
SDRAM_DQM
SDRAM_CLK
R860 22ohm
C865 15pF 50V

10-1-12 LVDS

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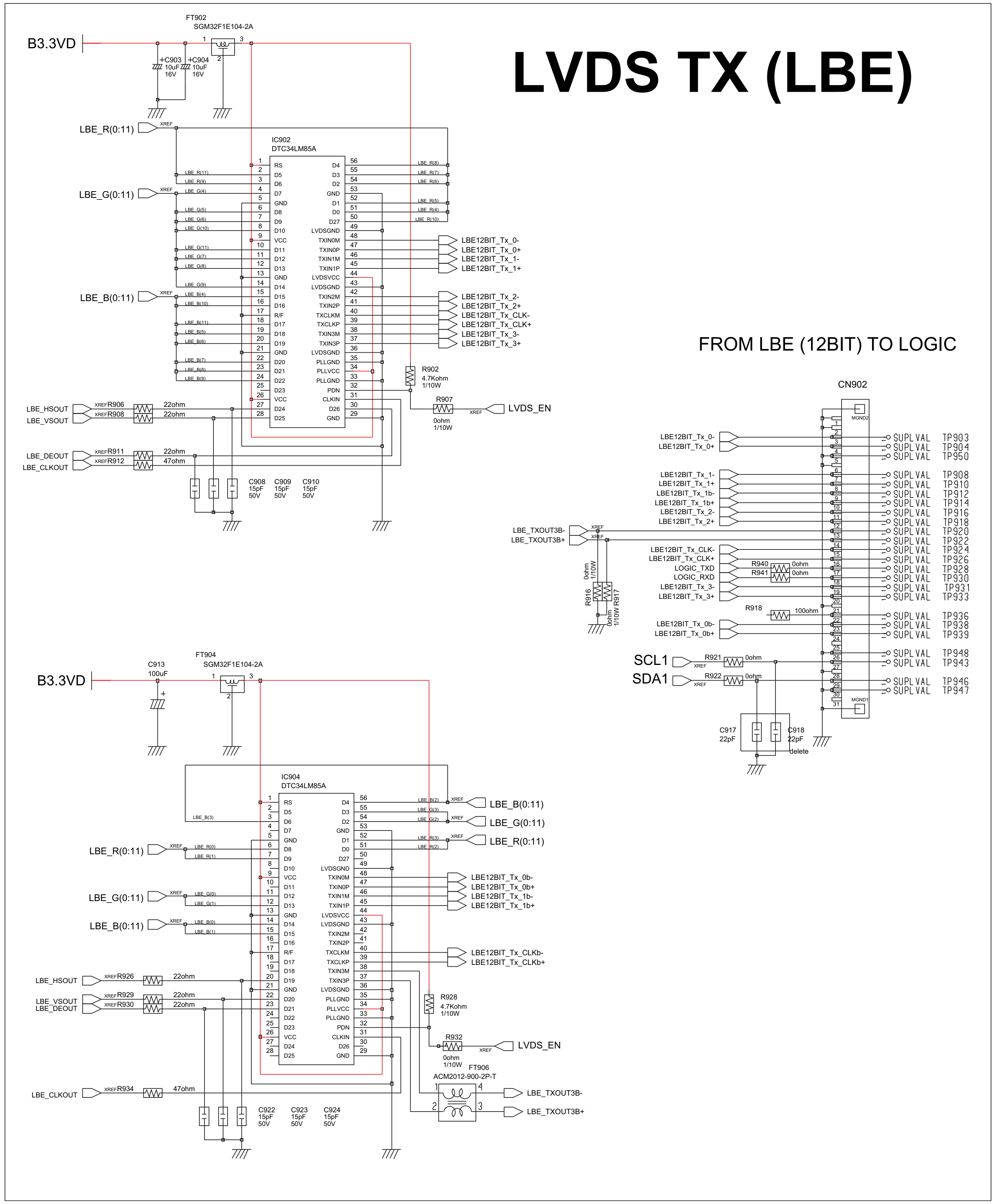
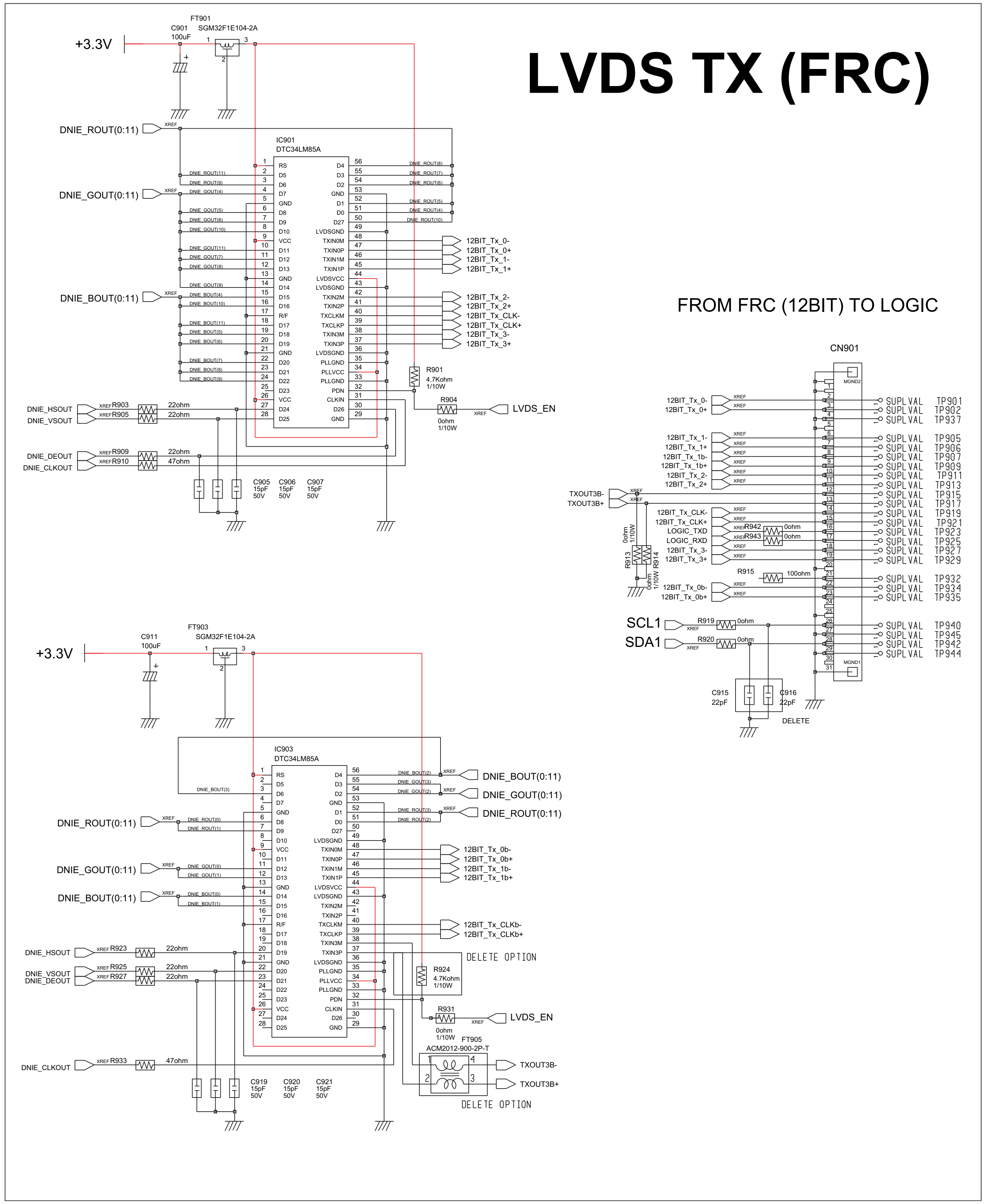
🟥	Power
🟦	Signal

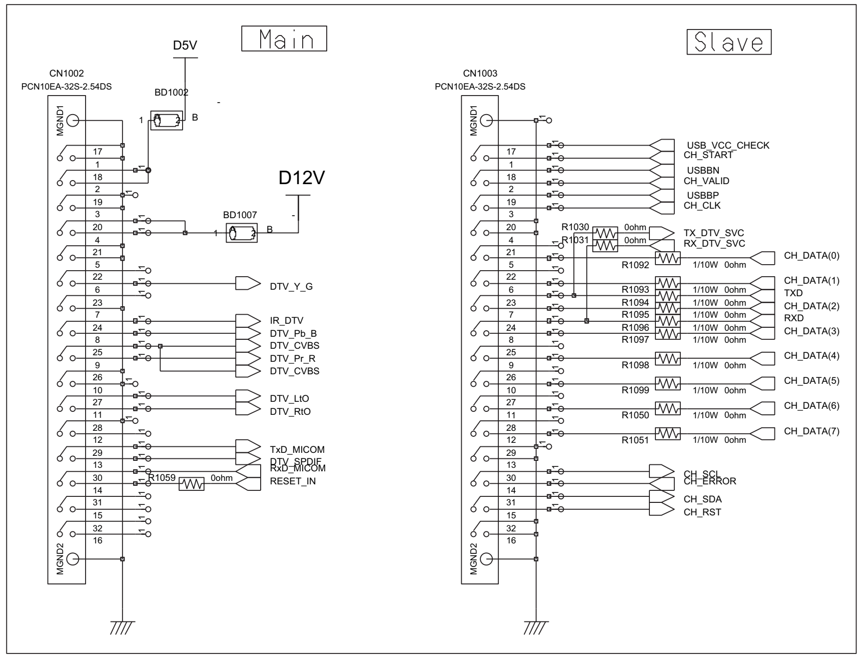

LVDS TX (LBE)
FROM LBE (12BIT) TO LOGIC
B3.3VD
FT902
SGM32F1E104-2A
C903 10uF 16V
C904 10uF 16V
LBE_R(0:11)
LBE_G(0:11)
LBE_B(0:11)
IC902
DTC34LM85A
LBE_HSOUT
LBE_VSOUT
LBE_DEOUT
LBE_CLKOUT
R906
R908
R911
R912
22ohm
47ohm
C908 15pF 50V
C909 15pF 50V
C910 15pF 50V
R902 4.7Kohm 1/10W
R907 0ohm 1/10W
LVDS_EN
LBE12BIT_Tx_0-
LBE12BIT_Tx_0+
LBE12BIT_Tx_1-
LBE12BIT_Tx_1+
LBE12BIT_Tx_2-
LBE12BIT_Tx_2+
LBE12BIT_Tx_CLK-
LBE12BIT_Tx_CLK+
LBE12BIT_Tx_3-
LBE12BIT_Tx_3+
CN902
LBE_TXOUT3B-
LBE_TXOUT3B+
LOGIC_TXD
LOGIC_RXD
R940 0ohm
R941 0ohm
R916
R917
R918 100ohm
LBE12BIT_Tx_0b-
LBE12BIT_Tx_0b+
SCL1
SDA1
R921 0ohm
R922 0ohm
C917 22pF
C918 22pF
delete
SUPLVAL
TP903 TP904 TP950 TP908 TP910 TP912 TP914 TP916 TP918 TP920 TP922 TP924 TP926 TP928 TP930 TP931 TP933 TP936 TP938 TP939 TP948 TP943 TP946 TP947
B3.3VD
C913 100uF
FT904
SGM32F1E104-2A
IC904
DTC34LM85A
LBE_B(0:11)
LBE_G(0:11)
LBE_R(0:11)
LBE12BIT_Tx_0b-
LBE12BIT_Tx_0b+
LBE12BIT_Tx_1b-
LBE12BIT_Tx_1b+
LBE12BIT_Tx_CLKb-
LBE12BIT_Tx_CLKb+
R926
R929
R930
R934
LBE_HSOUT
LBE_VSOUT
LBE_DEOUT
LBE_CLKOUT
R928 4.7Kohm 1/10W
R932 0ohm 1/10W
LVDS_EN
FT906
ACM2012-900-2P-T
LBE_TXOUT3B-
LBE_TXOUT3B+
C922 15pF 50V
C923 15pF 50V
C924 15pF 50V


LVDS TX (FRC)
FROM FRC (12BIT) TO LOGIC
+3.3V
FT901
C901 100uF
SGM32F1E104-2A
DNIE_ROUT(0:11)
DNIE_GOUT(0:11)
DNIE_BOUT(0:11)
IC901
DTC34LM85A
DNIE_HSOUT
DNIE_VSOUT
DNIE_DEOUT
DNIE_CLKOUT
R903
R905
R909
R910
22ohm
47ohm
C905 15pF 50V
C906 15pF 50V
C907 15pF 50V
R901 4.7Kohm 1/10W
R904 0ohm 1/10W
LVDS_EN
12BIT_Tx_0-
12BIT_Tx_0+
12BIT_Tx_1-
12BIT_Tx_1+
12BIT_Tx_2-
12BIT_Tx_2+
12BIT_Tx_CLK-
12BIT_Tx_CLK+
12BIT_Tx_3-
12BIT_Tx_3+
CN901
12BIT_Tx_1b-
12BIT_Tx_1b+
TXOUT3B-
TXOUT3B+
LOGIC_TXD
LOGIC_RXD
R942 0ohm
R943 0ohm
R913
R914
R915 100ohm
12BIT_Tx_0b-
12BIT_Tx_0b+
SCL1
SDA1
R919 0ohm
R920 0ohm
C915 22pF
C916 22pF
DELETE
SUPLVAL
TP901 TP902 TP937 TP905 TP906 TP907 TP909 TP911 TP913 TP915 TP917 TP919 TP921 TP923 TP925 TP927 TP929 TP932 TP934 TP935 TP940 TP945 TP942 TP944
+3.3V
C911 100uF
FT903
SGM32F1E104-2A
IC903
DTC34LM85A
DNIE_BOUT(0:11)
DNIE_GOUT(0:11)
DNIE_ROUT(0:11)
12BIT_Tx_0b-
12BIT_Tx_0b+
12BIT_Tx_1b-
12BIT_Tx_1b+
12BIT_Tx_CLKb-
12BIT_Tx_CLKb+
DELETE OPTION
R924 4.7Kohm 1/10W
R931 0ohm 1/10W
LVDS_EN
FT905
ACM2012-900-2P-T
TXOUT3B-
TXOUT3B+
DELETE OPTION
R923
R925
R927
R933
DNIE_HSOUT
DNIE_VSOUT
DNIE_DEOUT
DNIE_CLKOUT
C919 15pF 50V
C920 15pF 50V
C921 15pF 50V

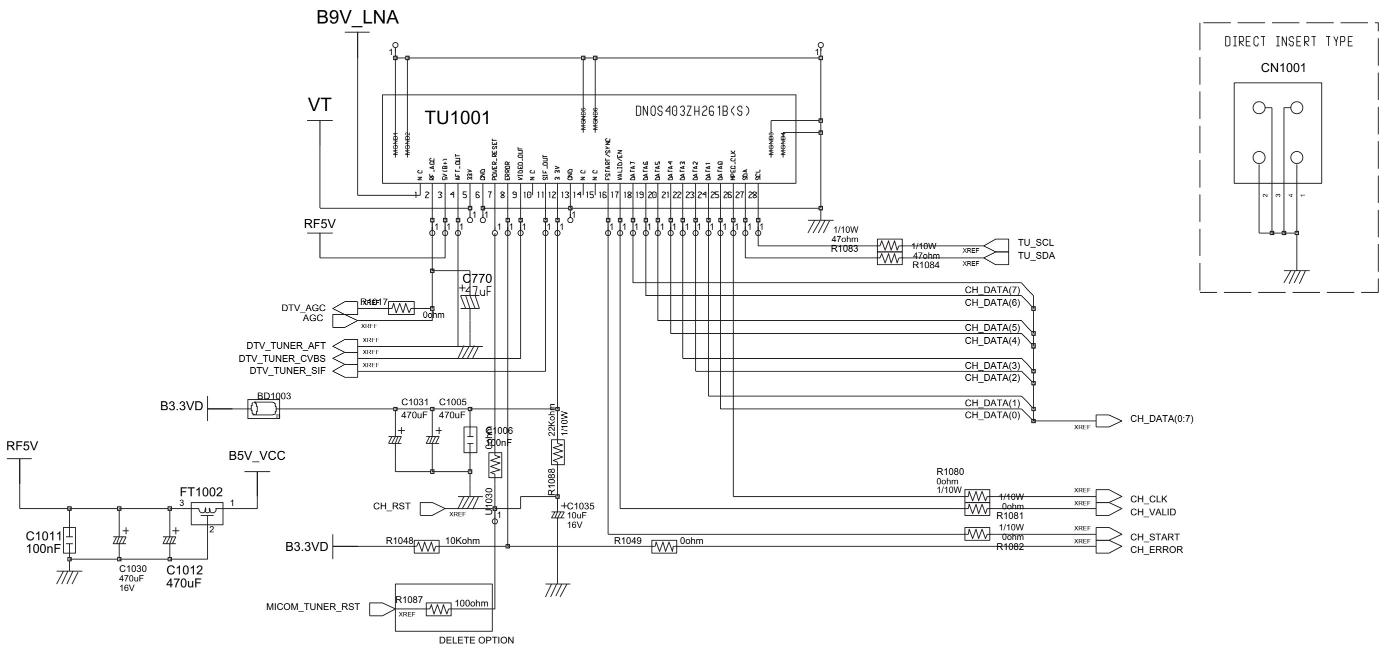
10-1-13 DTV / TUNER / POWER

This Document can not be used without Samsung's authorization.

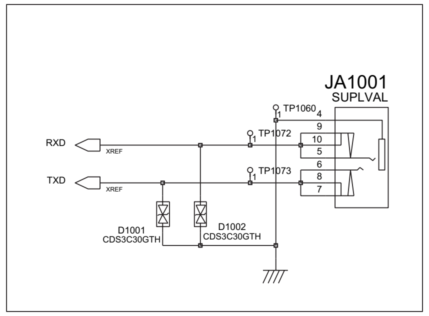
DTV MODULE CONNECTION


Main
Slave
D5V
D12V
CN1002
PCN10EA-32S-2.54DS
CN1003
PCN10EA-32S-2.54DS
BD1002
BD1007
MGND1
MGND2
DTV_Y_G
IR_DTV
DTV_Pb_B
DTV_CVBS
DTV_Pr_R
DTV_CVBS
DTV_LtO
DTV_RtO
TxD_MICOM
DTV_SPDIF
RxD_MICOM
RESET_IN
R1059
0ohm
USB_VCC_CHECK
CH_START
USBBN
CH_VALID
USBBP
CH_CLK
R1030
R1031
0ohm
TX_DTV_SVC
RX_DTV_SVC
R1092
R1093
R1094
R1095
R1096
R1097
R1098
R1099
R1050
R1051
1/10W 0ohm
CH_DATA(0)
CH_DATA(1)
TXD
CH_DATA(2)
RXD
CH_DATA(3)
CH_DATA(4)
CH_DATA(5)
CH_DATA(6)
CH_DATA(7)
CH_SCL
CH_ERROR
CH_SDA
CH_RST

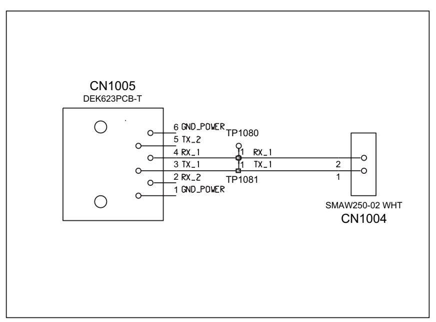
DIGITAL TUNER


B9V_LNA
VT
RF5V
TU1001
DNOS403ZH261B(S)
DIRECT INSERT TYPE
CN1001
DTV_AGC
AGC
R1017
0ohm
C770
47uF
DTV_TUNER_AFT
DTV_TUNER_CVBS
DTV_TUNER_SIF
B3.3VD
BD1003
C1031
470uF
C1005
470uF
C1006
100nF
R1088
22Kohm
1/10W
RF5V
B5V_VCC
FT1002
C1011
100nF
C1030
470uF
16V
C1012
470uF
CH_RST
R1086
C1035
10uF
16V
B3.3VD
R1048
10Kohm
R1049
0ohm
MICOM_TUNER_RST
R1087
100ohm
DELETE OPTION
R1083
R1084
1/10W
47ohm
TU_SCL
TU_SDA
CH_DATA(7)
CH_DATA(6)
CH_DATA(5)
CH_DATA(4)
CH_DATA(3)
CH_DATA(2)
CH_DATA(1)
CH_DATA(0)
CH_DATA(0:7)
R1080
0ohm
1/10W
R1081
R1082
CH_CLK
CH_VALID
CH_START
CH_ERROR
XREF

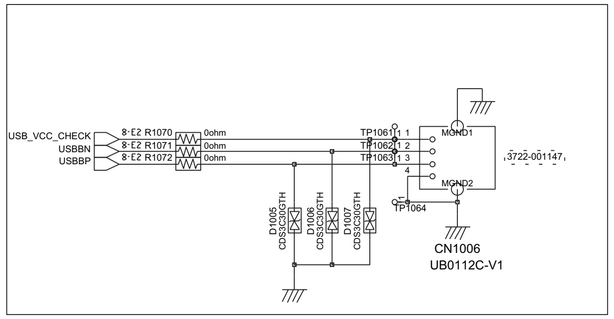
PHONE JACK

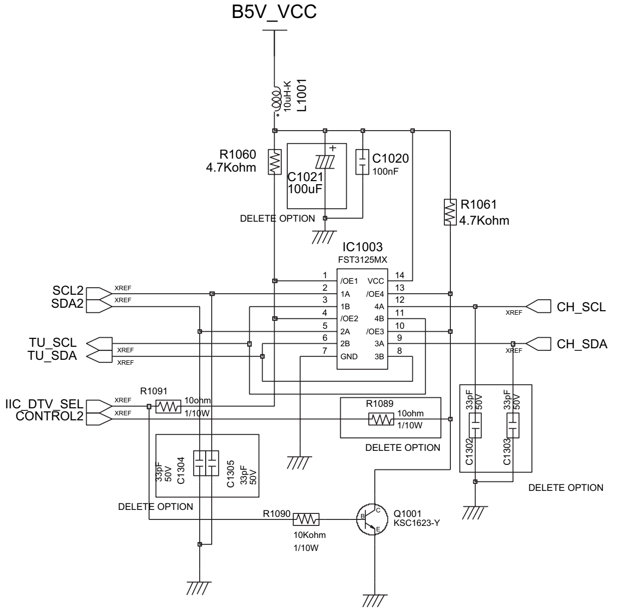

JA1001
SUPLVAL
RXD
TXD
TP1060
TP1072
TP1073
D1001
CDS3C30GTH
D1002
CDS3C30GTH
XREF

MODEM JACK

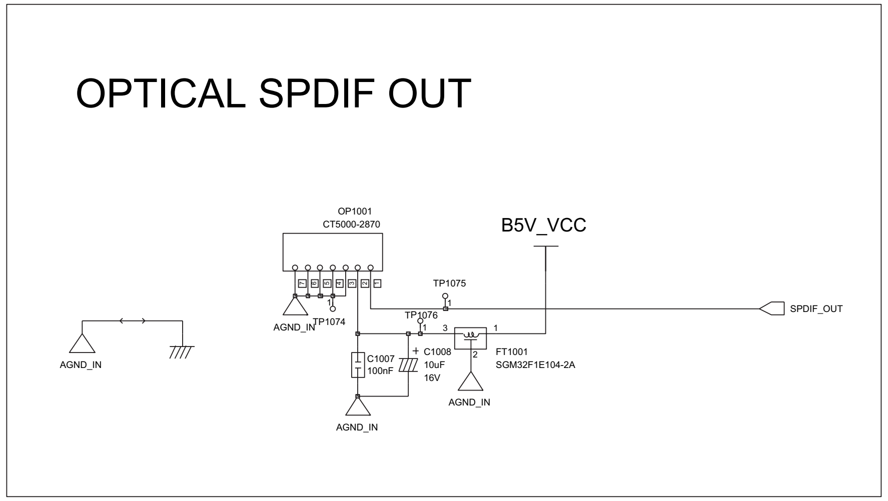

CN1005
DEK623PCB-T
6 GND_POWER
5 Tx_2
4 Rx_1
3 Tx_1
2 Rx_2
1 GND_POWER
TP1080
TP1081
RX_1
TX_1
SMAW250-02 WHT
CN1004

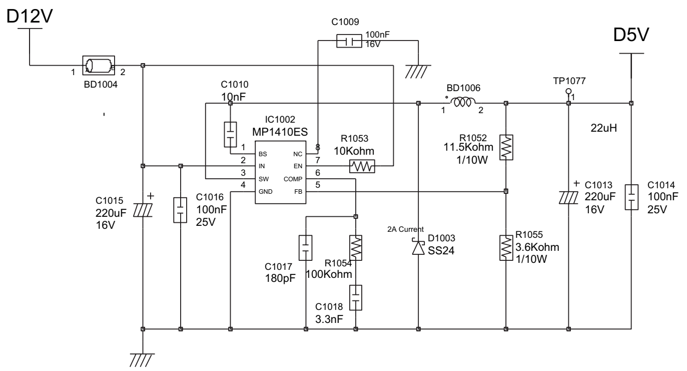
USB


USB_VCC_CHECK
USBBN
USBBP
R1070
R1071
R1072
0ohm
TP1061
TP1062
TP1063
TP1064
MGND1
MGND2
3722-001147
D1005
D1006
D1007
D1008
CDS3C30GTH
CN1006
UB0112C-V1


B5V_VCC
L1001
R1060
4.7Kohm
C1021
100uF
C1020
100nF
DELETE OPTION
R1061
4.7Kohm
IC1003
FST3125MX
/OE1
1A
1B
/OE2
2A
2B
GND
VCC
/OE4
4A
4B
/OE3
3A
3B
SCL2
SDA2
TU_SCL
TU_SDA
IIC_DTV_SEL
CONTROL2
CH_SCL
CH_SDA
R1091
10ohm
1/10W
R1089
10ohm
1/10W
C1304
C1305
33pF
50V
C1302
C1303
DELETE OPTION
R1090
10Kohm
1/10W
Q1001
KSC1623-Y

OPTICAL SPDIF OUT


OP1001
CT5000-2870
B5V_VCC
TP1075
TP1076
TP1074
AGND_IN
C1007
100nF
C1008
10uF
16V
FT1001
SGM32F1E104-2A
SPDIF_OUT

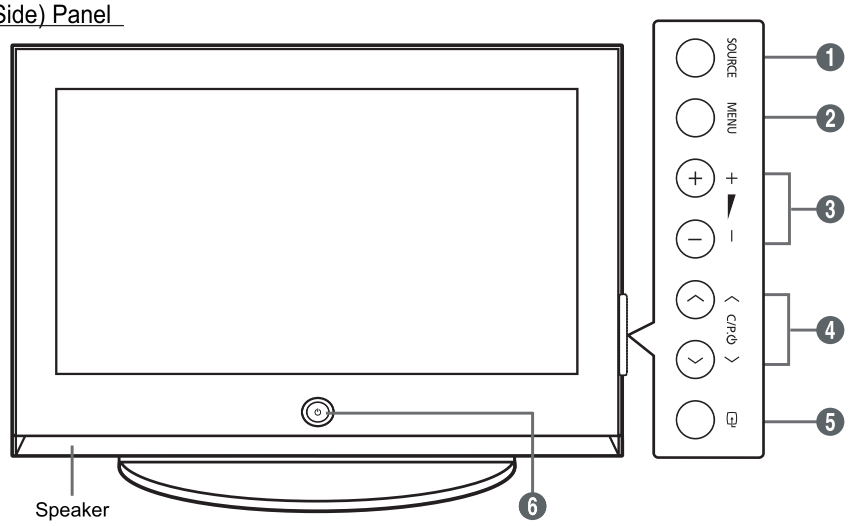

D12V
BD1004
C1009
100nF
16V
C1010
10nF
IC1002
MP1410ES
BS
IN
SW
GND
NC
EN
COMP
FB
R1053
10Kohm
BD1006
R1052
11.5Kohm
1/10W
TP1077
D5V
22uH
C1015
220uF
16V
C1016
100nF
25V
C1017
180pF
R1054
100Kohm
C1018
3.3nF
2A Current
D1003
SS24
R1055
3.6Kohm
1/10W
C1013
220uF
16V
C1014
100nF
25V

11. Operation Instruction & Installation

11-1 Product Features and Functions

11-1-1 Front (or Side) Panel

Front (or Side) Panel



1 SOURCE
Displays a menu of all of the available input sources (TV, Ext.1, Ext.2, AV, S-Video, Component, PC, HDMI).

2 MENU
Press to see the on-screen menu of your TV's features.

3 –◢ +
Press to decrease or increase the volume.
In the on-screen menu, use the –◢ + buttons as you use the œ and √ buttons on the remote control.

4 ∨ C/P.⏻ ∧
Press to change channels. In the on-screen menu, use the ∨ C/P.⏻ ∧ buttons as you use the ▲ and ▼ buttons on the remote control.

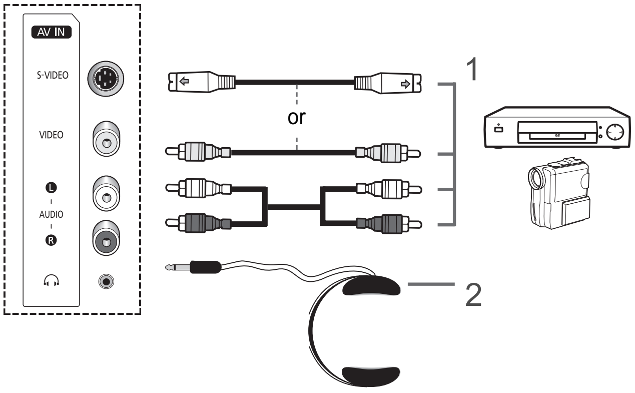
5 ⏎ (ENTER)
Press to confirm a selection.

6 ⏻ (Power) button
Press to turn the TV on and off.

Power Indicator
- Power Off: Blue
- Power On: Off

Remote Control Sensor
Aim the remote control towards this spot on the TV.

Side Panel

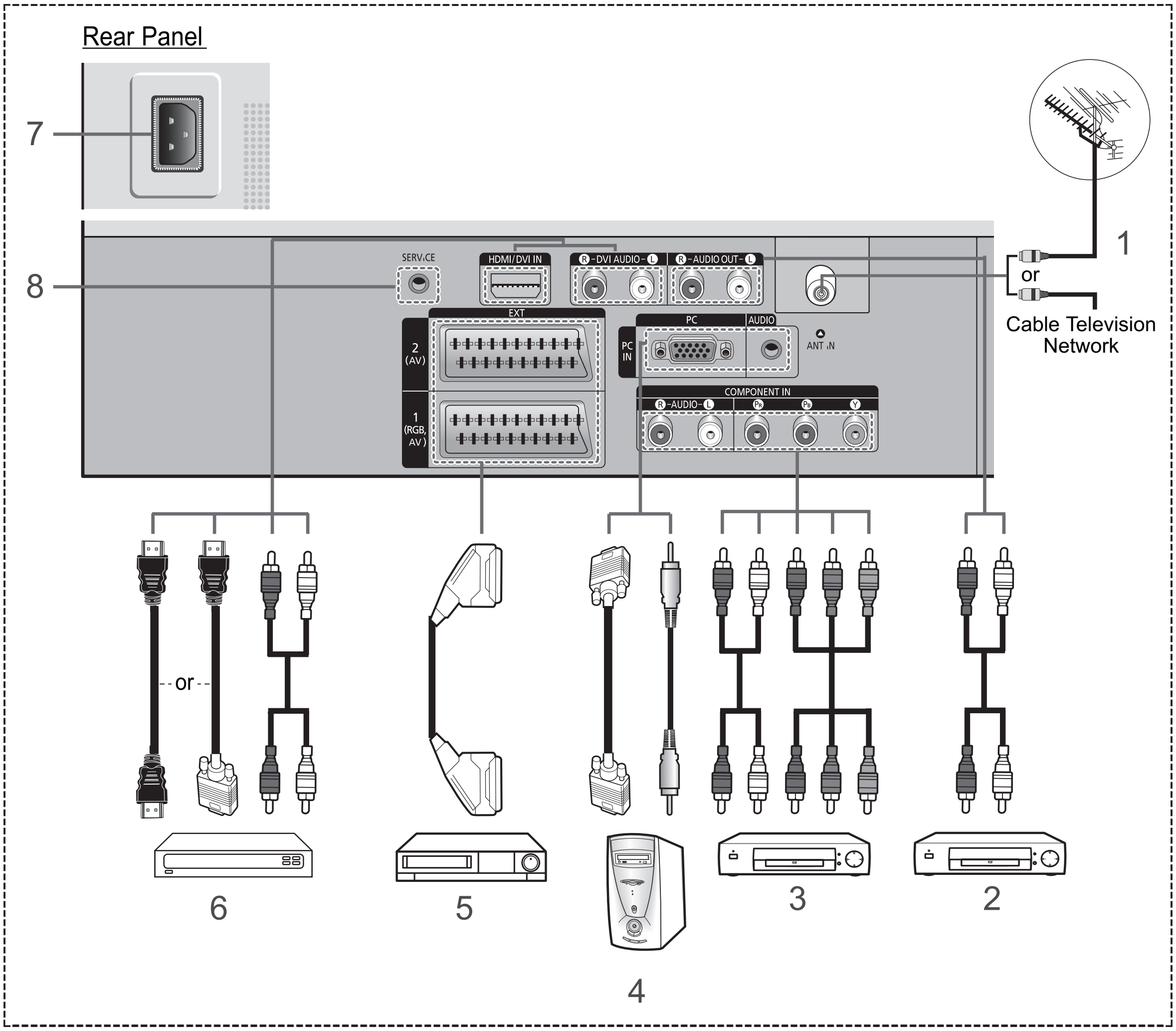


1 S-Video or Video / Audio L/R
- Video (S-Video or Video) and audio inputs for external devices, such as a camcorder or VCR.

2 headphones jack
- You can connect a set of headphones to your television if you wish to watch a television programme without disturbing the other people in the room.

➢ Prolonged use of headphones at a high volume may damage your hearing.

11-1-2 Rear Panel



☛ Whenever you connect an audio or video system to your set, ensure that all elements are switched off.

☛ When connecting an external device, match the colour of the connection terminal to the cable.

1 ANT IN VHF/UHF (75Ω)
- 75Ω Coaxial connector for Aerial/Cable Network.

2 Connecting external Audio Devices
- Connect RCA audio signals from the TV to an external source, such as Audio equipment.

3 COMPONENT IN
- Video (Y/P_B/P_R) and audio (AUDIO L/R) inputs for Component.

4 PC IN / AUDIO
- Connect to the video and audio output jack on your PC.

5 EXT 1, EXT 2
- Inputs or outputs for external devices, such as VCR, DVD, video game device or video disc players.

6 HDMI/DVI IN
- Connect to the HDMI jack of a device with HDMI output. These inputs can also be used as a DVI connection with separate analog audio inputs. An optional HDMI/DVI cable will be necessary to make this connection. When using the optional HDMI/DVI adapter, the DVI analog audio inputs on your TV allow you to receive left and right audio from your DVI device. (Not compatible with PC)
- When connecting this product via HDMI or DVI to a Set Top Box, DVD Player or Games Console etc, make sure that it has been set to a compatible video output mode as shown in the table below. Failure to observe this may result in picture distortion, image breakup or no picture.

➢ Supported modes for DVI or HDMI

	480i	480p	576i	576p	720p	1080i
50Hz	X	O	X	O	O	O
60Hz	X	O	X	X	O	O
Component	O	O	O	O	O	O

- Do not attempt to connect the HDMI/DVI connector to a PC or Laptop Graphics Card. (This will result in a blank screen being displayed)

DVI AUDIO IN L/R
- DVI audio outputs for external devices.

7 POWER IN
- Connect the supplied power cord.

8 SERVICE
- Connector for service only.

11-1-3 Remote Control

1 POWER button
(turns the TV on and off)

2 Number buttons for direct channel access

3 One/Two-digit channel selection

4 Channel control button

5 Selects the TV mode directly

6 ⊕ Volume increase
⊖ Volume decrease

7 Temporary sound switch-off

8 Displays the main on-screen menu

9 Picture-In-Picture On/Off

10 Sound effect selection

11 Picture effect selection

12 Adjust screen brightness to surrounding environment

14 Sound mode selection

15 TruSurround XT mode button

16 Remote control setup

17 Selects a target device to be controlled by the Samsung remote control (TV, DVD, STB, CABLE, VCR)

18 Available source selection

19 Previous channel

20 Automatic Power-off

21 Selects the PC mode directly

22 VCR/DVD Function
(Rewind, Stop, Play/Pause, Fast/Forward)

23 ⌃ Next channel
⌄ Previous channel

24 Exit the on-screen menu

25 Control the cursor in the menu

26 Use to see information on the current broadcast

28 Picture freeze

29 Picture size selection

30 Select the channel of sub picture (PIP)

32 If your remote control is not functioning properly, take out the batteries and press the reset button for about 2~3 seconds.
Re-insert the batteries and try using the remote control again.

Teletext Functions

5 Exit from the teletext display (depending on the model)

8 Teletext index

9 Teletext hold

13 Teletext store

18 Teletext mode selection (LIST/FLOF)

19 Teletext sub page

23 P ⌃ : Teletext next page
P ⌄ : Teletext previous page

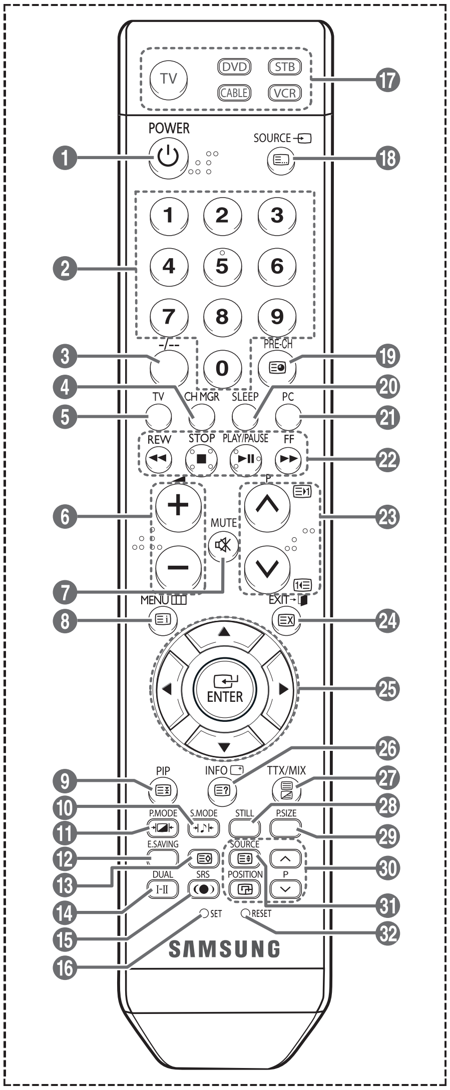
24 Teletext cancel

26 Teletext reveal

27 Teletext display/mix both teletext information and the normal broadcast

31 Teletext size selection

10 11 28 29
Fastext topic selection


TV
DVD
STB
CABLE
VCR
⑰
POWER
SOURCE
①
⑱
1
2
3
4
5
6
7
8
9
②
-/--
0
PRE-CH
③
⑲
④
⑳
TV
CH MGR
SLEEP
PC
⑤
㉑
REW
STOP
PLAY/PAUSE
FF
㉒
MUTE
⑥
㉓
⑦
MENU
EXIT
⑧
㉔
ENTER
㉕
㉖
PIP
INFO
TTX/MIX
⑨
㉗
⑩
P.MODE
S.MODE
STILL
P.SIZE
㉘
⑪
㉙
E.SAVING
SOURCE
⑫
㉚
⑬
DUAL
I-II
SRS
POSITION
P
⑭
㉛
SET
RESET
⑮
㉜
⑯
SAMSUNG

➢ The performance of the remote control may be affected by bright light.

➢ This is a special remote control for the visually impaired, and has Braille points on the Power, Channel and Volume buttons.

11-2 Installation Notes and Precautions

11-2-1 Installation Notes

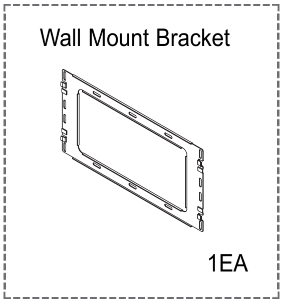
1. Contact a technician for installing the wall bracket.

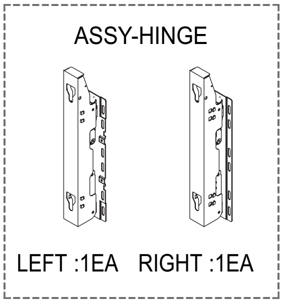
2. Samsung Electronics is not responsible for any damages to the product or harm to customers when the installation is done by the customer.

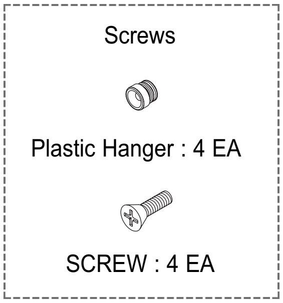
3. This product is for installing on cement walls. The product may not stay in place when installed on plaster or wood.

4. The package contents and parts supplied for the wall mount are subject to change without prior notice.

11-2-2 Mounting Kits

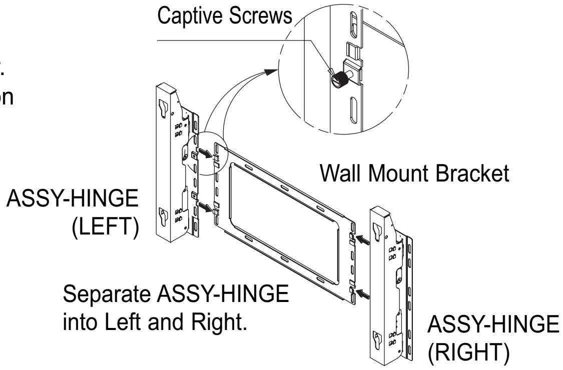

Wall Mount Bracket
1EA


ASSY-HINGE
LEFT :1EA
RIGHT :1EA


Screws
Plastic Hanger : 4 EA
SCREW : 4 EA

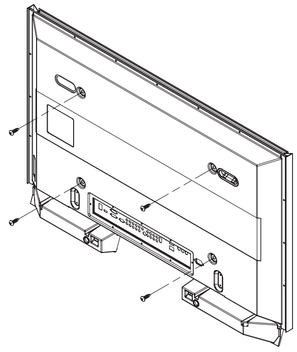
11-2-3 How to assemble the Wall Mount Bracket

1 The wall mount bracket is delivered separately. Please tighten the captive screw in the direction of the arrow after assembling the bracket. Install the Wall Mount Bracket after the screws are securely inserted into the wall.

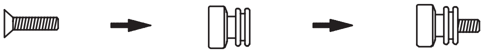

Captive Screws
Wall Mount Bracket
ASSY-HINGE (LEFT)
Separate ASSY-HINGE into Left and Right.
ASSY-HINGE (RIGHT)

11-2-4 Instructions on Securing the SET to the Wall Mount Bracket

1 Remove the screws from the back of the PDP.

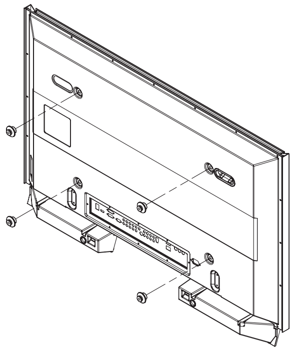


2 Use the screw and assemble the plastic hanger. (Please refer to the following picture.)

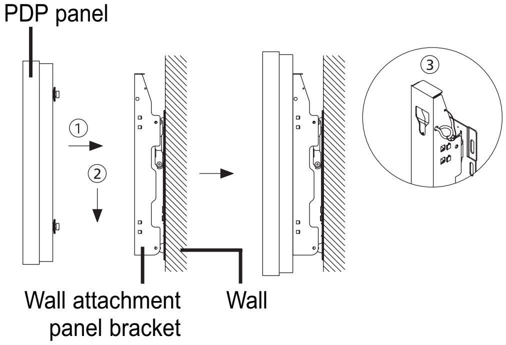


☛ 1 Please ask the installers to install the wall mount bracket.
2 Please be sure to check if the plastic hanger is completely secured on both the left and right side after hanging the SET on the wall mount bracket.
3 Please avoid catching your fingers while installing and adjusting the angle.
4 Please tightly secure the wall mount bracket to the wall to avoid injury from a falling SET.

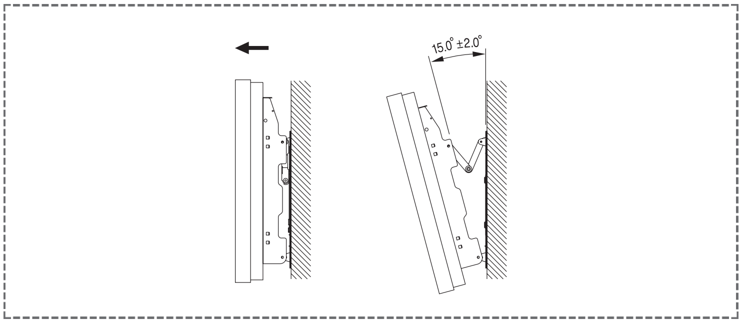
3 Tighten the screws of the plastic hanger (shown in picture 2) to the back side of the PDP.



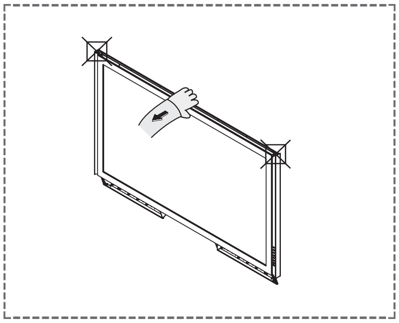
4 Remove the Safety Pins. Fasten the 4 plastic latches assembled at step (③) on the back side of the PDP using the guide holes of the wall mount, push (①) and hook (②) down to secure the PDP on the wall mount as illustrated. Secure the PDP by inserting the Safety Pins, not to fall from the wall mount.



11-2-5 How to Adjust Mounting Angle

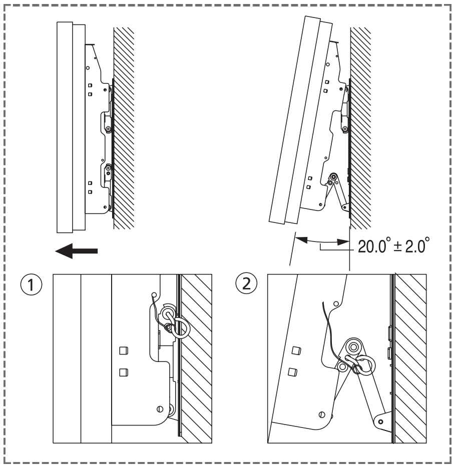


1 Secure the SET to the wall mount bracket.(Please refer to the follow ing instructions.)
2 Set the angle by pulling the upper end of the SET attached to bracket in the direction of the arrow. (Refer to the illustration on the right.)
3 The angle can be adjusted from 0° to 15° by ±2°.



Hold onto the middle of the PDP to adjust the angle (not the sides of the PDP).

11-2-6 Connecting External Devices to the PDP



1 Be sure to remove the safety pins underneath the PDP.
  ➢ If the safety pins are not removed, the angle cannot be adjusted. Any attempt to do so may cause damage to the PDP.
2 Hold onto the bottom of the PDP and pull forward fully as directed by the arrow as illustrated) to adjust the angle. (0°~20° by 2°) Insert the Safety Pins to the front guide holes on both sides as illustrated in figure ②.
  ➢ Viewing the PDP after connecting the external devices Remove the Safety Pins to adjust the angle to 0°, and then secure the Safety Pins again.
  ☛ For safety, be sure to secure the PDP using the safety pins. If the safety pins are not used, the PDP may fall, causing serious injury.

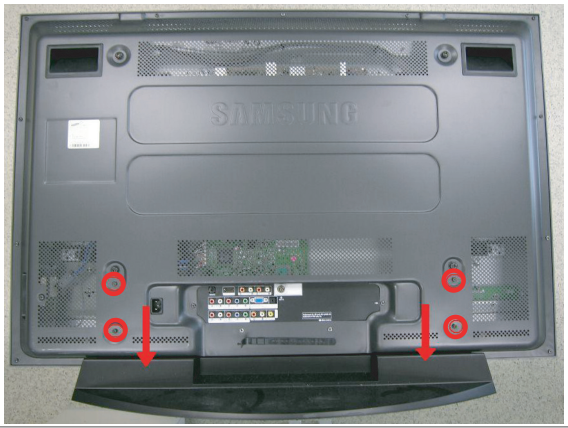
12. Disassembly & Reassembly

12-1 Overhaul Disassembly & Reassembly

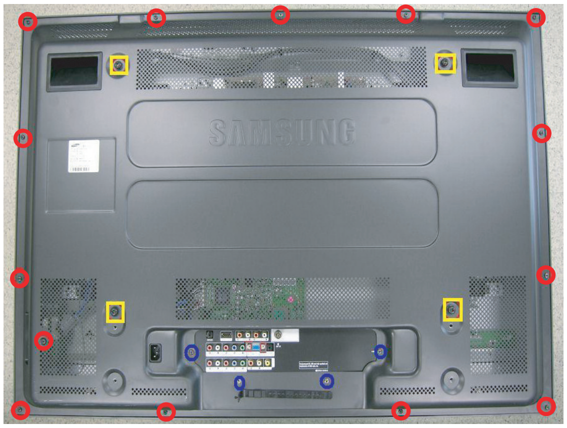
⚠ Notice

- Be sure to separate the power cord before disassembling the unit.
- Discharge the capacitors first when separating PCB's with high capacity capacitors such as SMPS, X Main Board, Y Main Board, etc. (A spark may be generated by the electric charge, and there is danger of electronic shock.)
- Check that the cables are properly connected referring to the circuit diagram when disassembling or assembling the unit taking care not to damage the cables.
- Take care not to cause a flaw in the Glass Filter in the front.
- Assemble the boards in the reverse order of the disassembly.
- The plasma must be layed down on a flat padded surface for disassembly and reassembly.

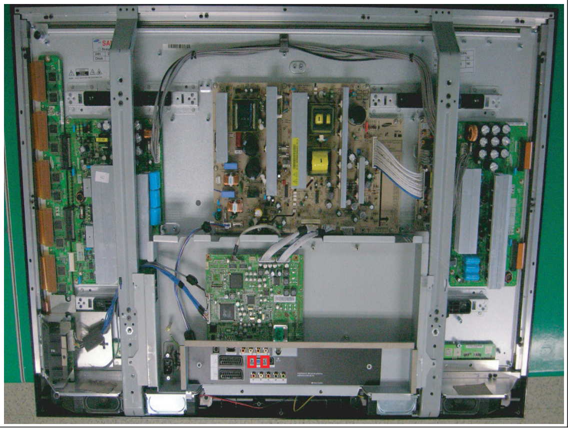
12-1-1 Separation of ASSY STAND P-BASE

Part Name	Description	Description Photo
Stand	① Remove 4 screws. : PH,+,WSP,S,M4,L35,ZPC(BLK) ② Pull the ASSY STAND P-BASE down to remove it from the unit. ⚠: Please lay the PDP unit face down on a soft surface when removing the stand.	

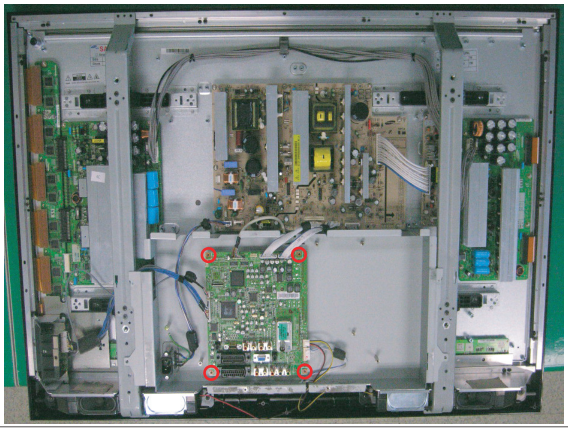
12-1-2 Separation of ASSY COVER P-REAR

Part Name	Description	Description Photo
Cover Rear	① Remove 4 screws.(🟨) : M8,L16,ZPC(BLK),SWRCH18A,WP ② Remove 14 screws.(🔴) : BH,+,B,M4,L12,ZPC(BLK) ③ Remove 4 screws.(🔵) : BH,+,S,M4,L10,ZPC(BLK) ④ Remove the ASSY COVER REAR.	

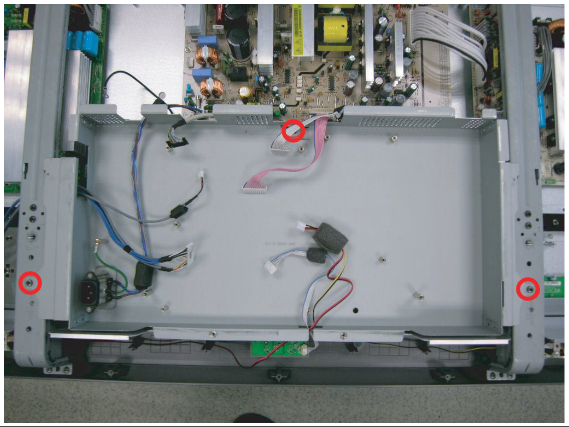
12-1-3 Separation of ASSY BRACKET P-TERMINAL

Part Name	Description	Description Photo
Bracket Terminal	① Remove the 2 Hex nuts for the PC input. : #4-40,L6,NI PLT,C3601,- ② Remove Bracket Terminal.	

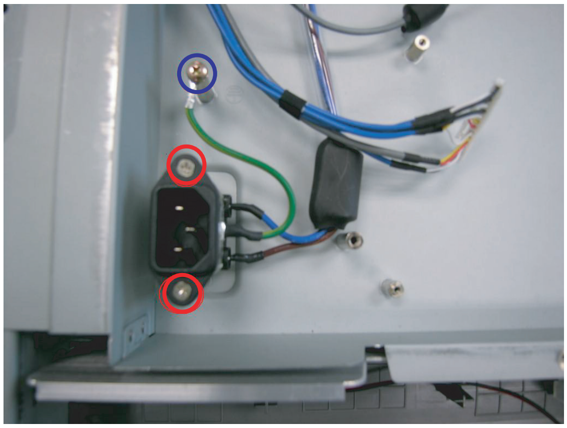
12-1-4 Separation of ASSY PCB MISC-MAIN

Part Name	Description	Description Photo
Main Board	① Detach all connectors from the Main Board. ② Remove 4 screws. : PH,+,WWP,M3,L8,NI PLT ③ Remove the Main Board.	

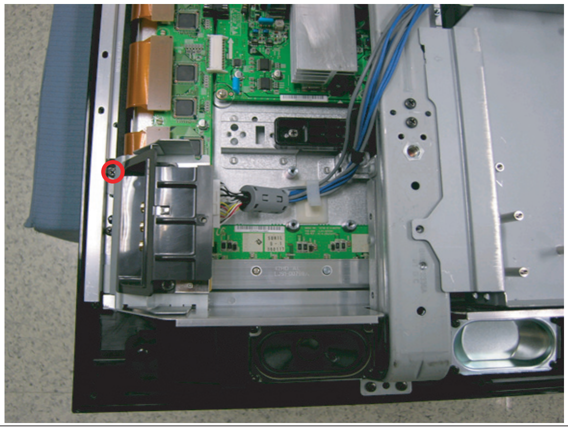
12-1-5 Separation of BRACKET-PCB

Part Name	Description	Description Photo
Bracket PCB	① Remove 3 screws. : BH,+,S,M4,L10,ZPC(BLK) ② Remove the BRACKET-PCB.	

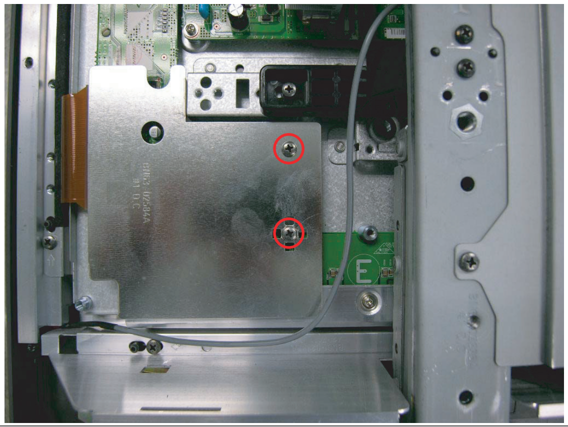
12-1-6 Separation of FILTER-EMI AC LINE

Part Name	Description	Description Photo
FILTER EMI AC LINe	① Detach connector from Main SMPS. ② Remove 2 screws. : PH,+,WWP,M3,L8,NI PLT ③ Remove a screw. : BH,+,S,M4,L10,ZPC(BLK) ④ Remove FILTER-EMI AC LINE.	

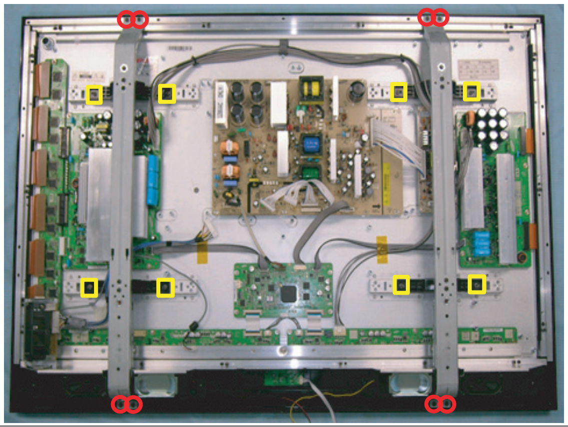
12-1-7 Separation of ASSY BOARD P-SIDE AV

Part Name	Description	Description Photo
Side AV	① Remove 1 screw. : BH,+,S,M4,L10,ZPC(BLK) ② Remove the Side AV assy.	

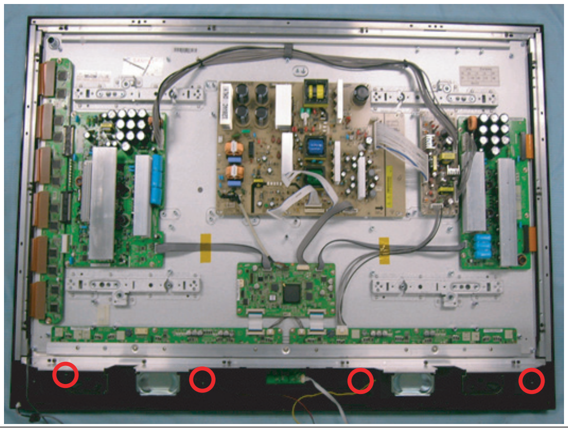
12-1-8 Separation of SHIELD CASE

Part Name	Description	Description Photo
Shield Case	① Remove 2 screw. : BH,+,S,M4,L10,ZPC(BLK) ② Remove the Shield Case.	

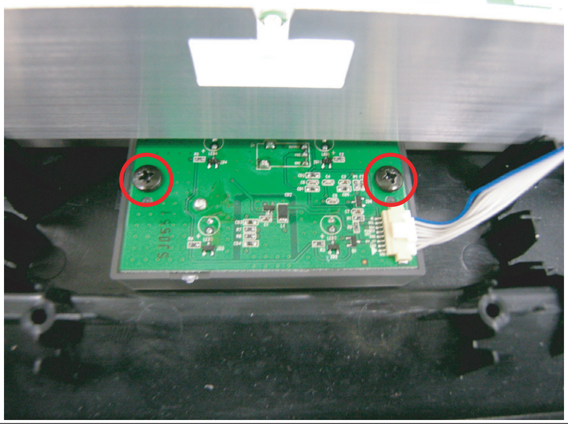
12-1-9 Separation of ASSY BRACKET P-WALL

Part Name	Description	Description Photo
Wall Bracket	① Remove 8 screws. : BH,+,B,M4,L12,ZPC(BLK) ② Remove 8 screws. : BH,+,S,M4,L10,ZPC(BLK) ③ Remove Wall Bracket. ⚠: Please lay the PDP panel face down on a soft surface when separating front cover.	

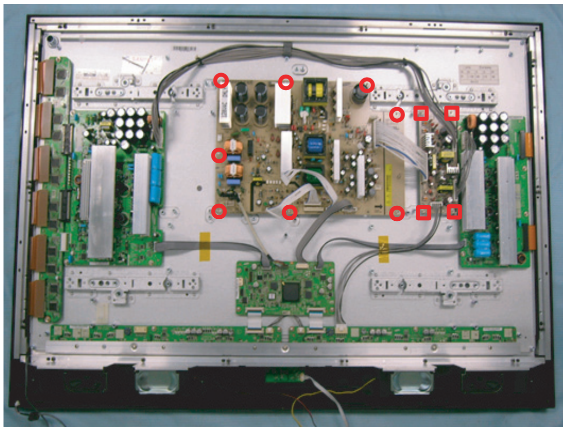
12-1-10 Separation of ASSY SPEAKER P

Part Name	Description	Description Photo
Speaker	① Remove 4 screws. : BH,+,WP,B,M4.0,L12,ZPC(BLK),SWRCH18A,- ② Remove the Speaker.	

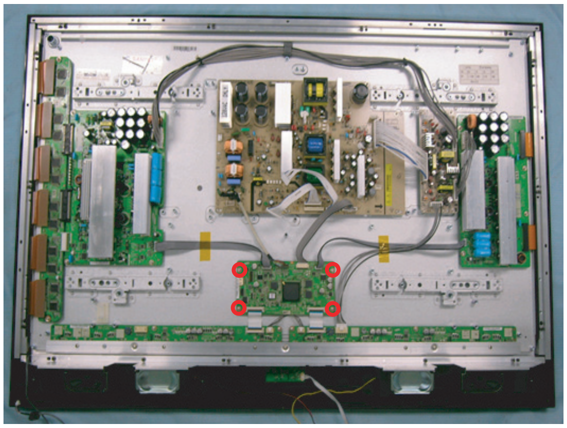
12-1-11 Separation of ASSY BOARD P-POWER&IR

Part Name	Description	Description Photo
Power & IR Board	① Remove 2 screw. : BH,+,-,S,M4,L8,ZPC(BLK) ② Remove the Power & IR Board.	

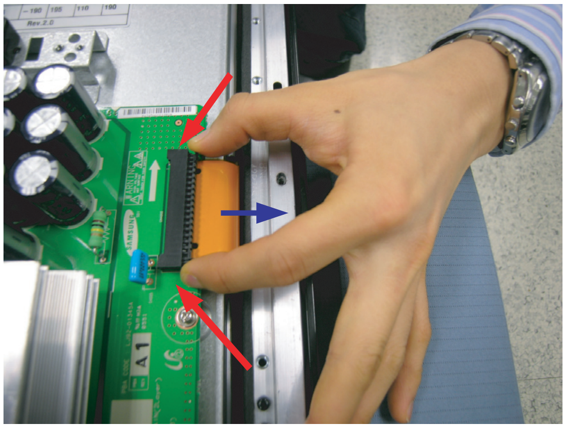
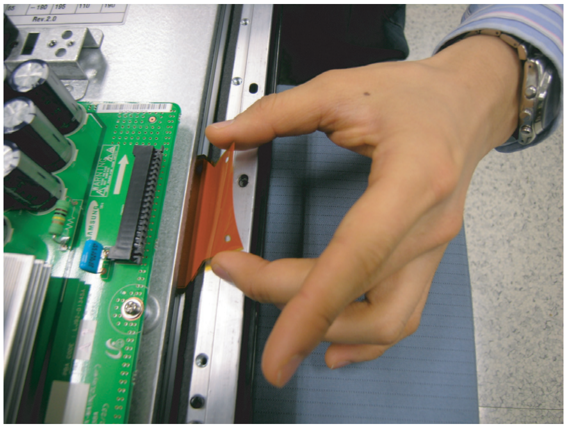
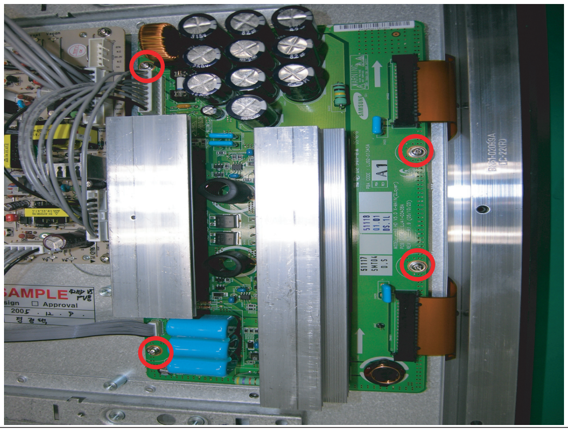
12-1-12 Separation of ASSY PCB P-SMPS & SMPS DC-DC

Part Name	Description	Description Photo
SMPS & SMPS DC-DC Board	① Detach all connectors from the Assy PCB P-SMPS. ② Remove 8 screws. : PH,+,WWP,M3,L8,NI PLT ③ Remove the Assy SMPS PCB. ④ Detach all connectors from the Assy SMPS DC/DC Board. ⑤ Remove 4 screws. : PH,+,WWP,M3,L8,NI PLT ⑥ Remove the SMPS DC/DC Board. ⚠ : Wear gloves when handling the power board as there may be some remaining electrical charge in the capacitor. Specifically, avoid touching any part of the capacitor.	

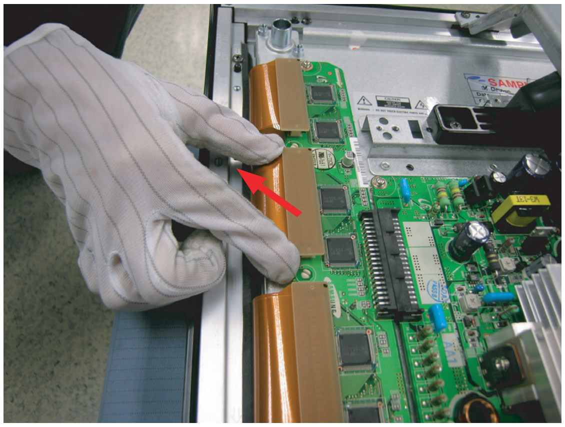
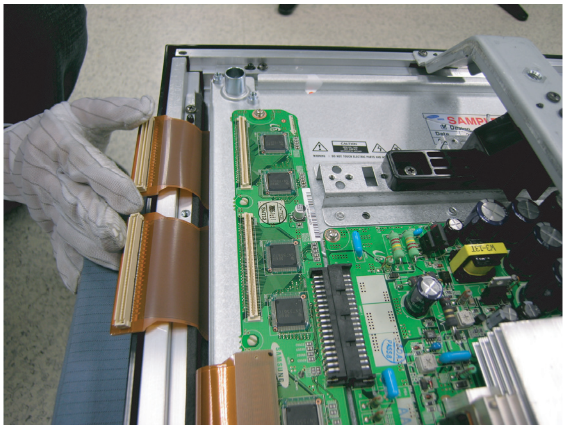
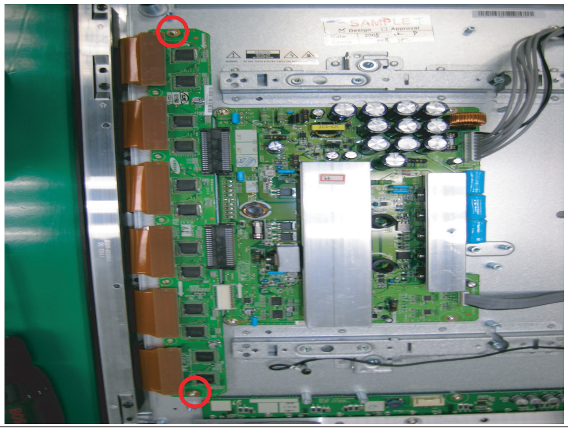
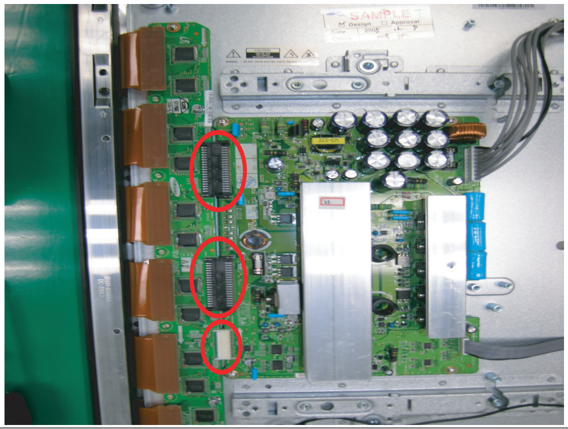
12-1-13 Separation of ASSY PDP MODULE P-LOGIC MAIN BOARD

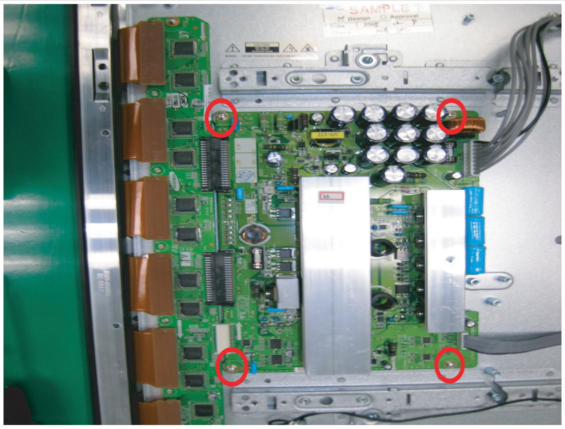
Part Name	Description	Description Photo
Logic Board	① Detach all connectors from the Logic Main Board. ② Remove 4 screws. : WSP,PH,+,M3,L8,NI PLT ③ Remove the Logic Main Board.	

12-1-14 Separation of ASSY PDP MODULE P-X MAIN BOARD

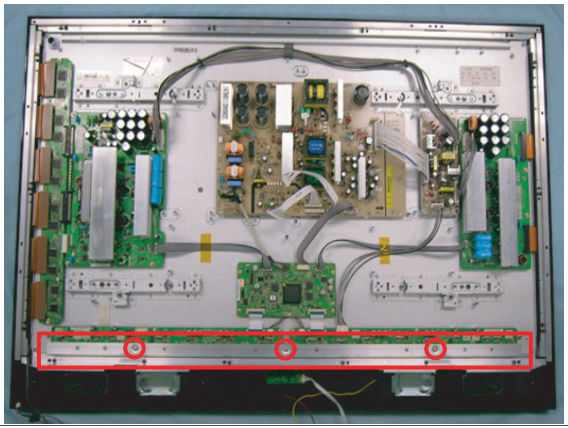
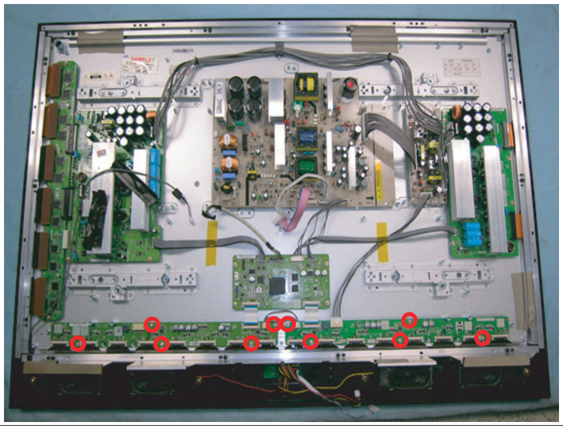
Part Name	Description	Description Photo
Flat Cable	① Detach all Connectors from the X Main Board. ※ To separate the Flat Cable of the X-Board, press the upper and the lower sides of the connector.	 
X-Main Board	① Remove 4 screws. : PH,+,WWP,M3,L8,NI PLT ② Remove the X-Main Board.	

12-1-15 Separation of ASSY PDP MODULE P-Y MAIN BOARD

Part Name	Description	Description Photo
Flat Cable	① Detach the 6 scan board connectors from the panel by pulling the holder from both the top and bottom ends.	 
Y-Scan	① Remove 2 screws. : PH,+,WWP,M3,L8,NI PLT	
Connectors	① Separate the scan board from the Y-Main Board by detaching the 3 connectors and remove the Scan Boards.	

Part Name	Description	Description Photo
Y-Main Board	① Remove 4 screws. : PH,+,WWP,M3,L8,NI PLT ② Detach all connectors from the Y-Main Board.	

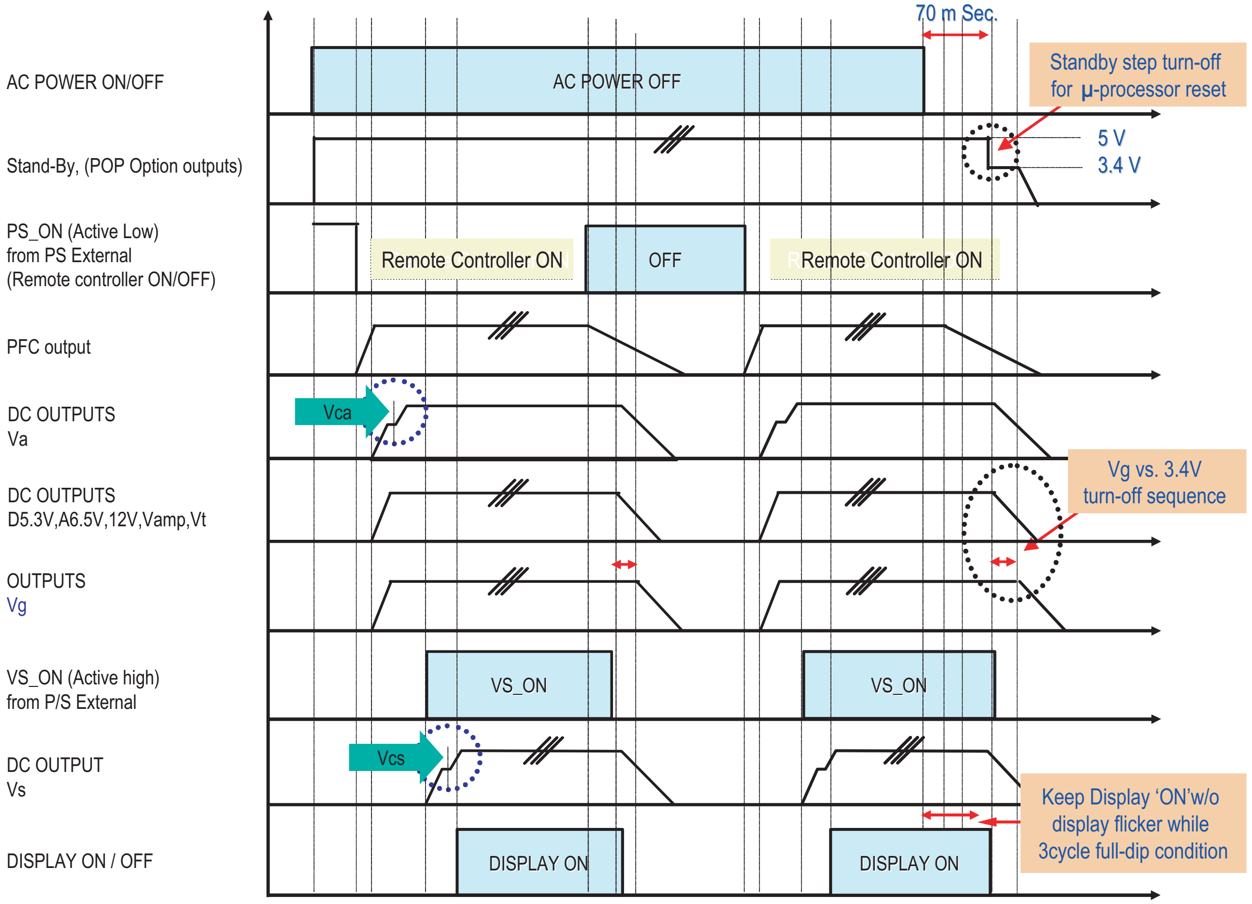
12-1-16 Separation of ASSY PDP MODULE P-ADDRESS BUFFER BOARD

Part Name	Description	Description Photo
Still Bar	① Remove 3 screws. : PH,+,WWP,M3,L8,NI PLT ② Remove the still bar.	
Buffer	① Detach the all connectors from the buffer board. ② Remove 10 screws. : PH,+,WWP,M3,L8,NI PLT ③ Remove the E-Board and F-Board.	

MEMO

13. Circuit Description

13-1 Power ON/OFF Signal Timing Sequence


AC POWER ON/OFF
Stand-By, (POP Option outputs)
PS_ON (Active Low)
from PS External
(Remote controller ON/OFF)
PFC output
DC OUTPUTS
Va
DC OUTPUTS
D5.3V,A6.5V,12V,Vamp,Vt
OUTPUTS
Vg
VS_ON (Active high)
from P/S External
DC OUTPUT
Vs
DISPLAY ON / OFF
AC POWER OFF
70 m Sec.
Standby step turn-off
for μ-processor reset
5 V
3.4 V
Remote Controller ON
OFF
Remote Controller ON
Vca
Vg vs. 3.4V
turn-off sequence
VS_ON
VS_ON
Vcs
Keep Display 'ON'w/o
display flicker while
3cycle full-dip condition
DISPLAY ON
DISPLAY ON

1. When connecting the AC power cord, Stand-By 5V from the Main SMPS is supplied to the Main Board (Pin 3 of CN1002 of Main Board).

2. When pressing the Power button on the remote control or on the main body, PS_ON (Pin 5 of CN1002 of Main Board) changes from High to Low.

3. If the PS_ON signal changes to Low, the Main SMPS supplies power to the Main Board and Logic Board, and Va and Vg power is supplied to the DC-DC SMPS.

4. If the VS_ON signal from the Logic Board changes from Low to High, the Main SMPS supplies VS power to the X and Y Main Board through the DC-DC SMPS, and the screen displays a picture on it.

13-2 Partial Block Description

13-2-1 Main SMPS

1. Outline (PDP 42inch/50inch SMPS)
Considering various related conditions, the switching regulator with good efficiency and allowing for its small size and light weight was used as the power supply for PDP 42inch/50inch, VS requiring high power consumption Asymmetrical Half Bridge converter and flyback converter. To comply with the international harmonics standards and improve the power factor, active PFC(Power Factor Correction) was used to rectify AC input into +400V DC output, which in turns used as input to the switching regulator.

2. Input
The power supply shall be capable of supplying full rated output power over free voltage ranges that are rated 100 VAC - 240 VAC RMS nominal. Operating voltage : 90 VAC - 264 VAC
The power supply must be able to start up under peak loading at 90V AC. The power supply shall automatically recover from AC power loss. (Note that nominal voltages for test purposes are considered to be with +/- 1.0V of nominal).
STD_5V & Vpr2(3.3V) is a SELV standby voltage that is always present when AC mains voltage present.

3. Output

Output Name	Output Voltage	Output Current(Max.)	Using in PDP Driving
VS	+190V ~ 220V (210V)	2.0A	Sustain Voltage of Drive Board
VA	+60V ~ 80V (70V)	3.0A	Address Voltage of Drive Board
D5.3V	+5.3V	5.0A	
A6.5V	+6.5V	3.0A	
FAN_9V	+9V	0.2A	
VG	+15V	1.0A	
D12V	+12V	1.5A	
A12V	+5.3V	0.5A	
18VAMP	+18V	2.5A	Amp Voltage of Audio Board
VT	+33V	0.006A	
STD_5V	+5V	1.0A	Standby for Remote Control

① Over Voltage Protection
The over voltage sense circuitry and reference shall reside in package that are separate and distinct from the regulator control circuitry and reference. No single point fault shall be able to cause a sustained over voltage condition on any of all outputs.
The supply shall provide latch-mode Over Voltage Protection as defined below.

Parameter	Min	Unit
VS(210V)	250 ~	V
VA(70V)	100 ~	V
VCC(+5.3V)	6.8 ~	V

② Short Circuit and Over current Protection

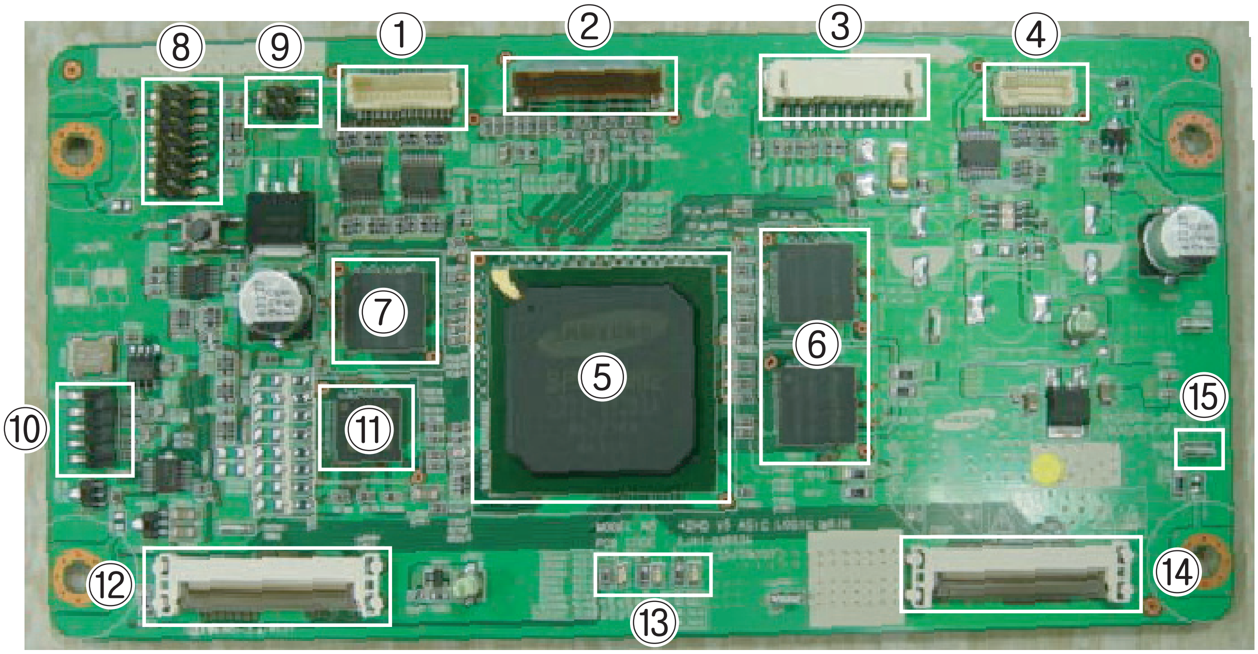
An output short circuit is defined as output impedance of less than 300mohms. The power supply shall shutdown and latch off for shorting VS DC rails to return. Shorts between main output rails and STD_5V shall not cause any damages to the power supply. The power supply shall either shutdown and latch off for shorting is removed, the P/S shall recover. The power supply shall be capable of withstanding a continuous short-circuit to the output without damage or over stress to the unit (components, PCB traces,connectors,etc.) under the input conditions specified in Section 3 above. Current Protection as defined below.

Output	Over Current Limit	Unit
VS(210V)	20A, Constant Current.(TBD)	A
VA(70V)	10A, Constant Current.(TBD)	A
Output except Vs,Va	No damage (Auto Recovery or Shut down.)	A

13-2-2 PDP Module

1. Logic Board

■ A name of main part of Logic Board and vocabulary.



Item	Name	Explanation
①	Y Connector	The connector to output the control signal for the Y drive board.
②	LVDS Connector	The connector to receive the RGB, H, V, DATAEN and DCLK signals that have been LVDS encoded through the Main board.
③	Power Connector	The connector to receive power (5V, 3.3V) for the Logic board.
④	X Connector	The connector to output the control signal for the X drive board.
⑤	ASIC CHIP	The main processor that generates and outputs the logic drive signal and the address data.
⑥	DDR MEMORY (MENCON)	The Memory to restore Address output data.
⑦	DDR MEMORY (Frame Delay)	The Memory to restore FCR data.
⑧	JTAG PORT	The port to communicate uCOM.
⑨	Initial image option PIN	Initial image select F/W or BLACK : Jumper Yes : **4 3** / 2 1 or 4 3 / **2 1** Full White, Jumper No : 4 3 / 2 1 Black
⑩	Micom Loading 5Pin Connector or Uart Connector	The connector to load the Micom drive program. The program is loaded by connecting to the GA-WRITER. Connector that loads and controls 512K data, and connects kiss can Board
⑪	ARM-PROCESSOR	IC block Control-signal to drive logic main.
⑫	Buffer Connector	The connector to output the address data and the control signal to the E-buffer board.
⑬	Operating Status LED	The LED that shows whether the Sync and Clock signal is properly supplied to the logic board. (Normal Status: Blinks at 0.5 second intervals)
⑭	Buffer Connector	The connector to output the address data and the control signal to the F-buffer board.
⑮	V-TOGG	V-SYNC output pin.

■ About Logic Board

The Logic Board consists of a Logic Main board, which processes the video signal input through LVDS and creates the address driver output and XY drive signals, and a Buffer board, which buffers the output signal and outputs the signal to the Address Driver IC (TCP IC).

Logic Board		Function	Remark
Logic Main		- Video Signal Processing (W/L, error diffusion, APC, FCR) Built-in LVDS Application and 1 ASIC Chip - Outputs the Address Driver Control and Data Signals to the Buffer board - Outputs the XY Drive Board Control Signal - Major Drive Voltage Monitoring (MICOM Circuit Block) : Detects abnormal voltage applications and protects drive circuits - Temperature Induced Operating Mode (Low Temperature/Room Temperature/High Temperature) : Optimization of discharge by temperature	
Buffer Board	E Buffer Board	Outputs data and control signals to the bottom left TCP IC.	Single Scan
	F Buffer Board	Outputs data and control signals to the bottom right TCP IC.	

■ Normal Waveform

When the Operating LED blinks normally (at 0.5 second intervals), which indicates the normal operation of the PDP Set and Logic Board, and the V-SYNC and data output signals are normal.

If the set is out of order, perform troubleshooting according to the procedures below.

1) Visual Inspection : Check if the Operating LED on the Logic Main blinks at a 0.5 second interval.

▶ If the Operating LED blinks too fast or too slow, you have to reload the data onto the MICOM, as this indicates abnormal data processing in the MICOM. To load the data, supply power to the module and load the data using GA-WRITER.

2) If no problem has been found through the visual inspection, check if the drive waveforms and the address data output are normal. (Check Point: Check the DAMPING R-NET output of each data output terminal.)

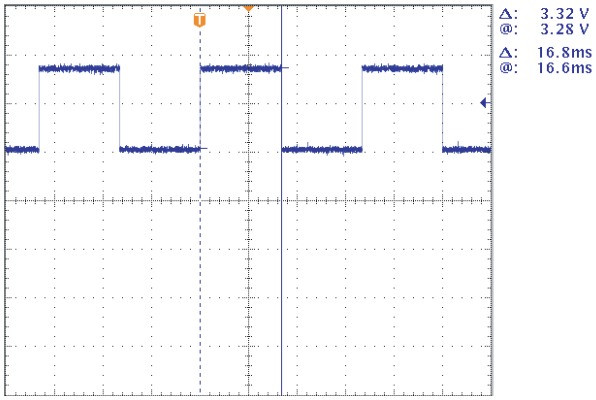
▶ If no drive waveform or address output signal is detected, load data onto the MICOM according to the procedures described above, as this indicates a MICOM data error.

▶ If data output is detected but is abnormal, it indicates a hardware short-circuit if measured for the drive waveform, or it indicates abnormal data output due to the abnormal operation of the DDR memory caused by the abnormal Vref voltage if measured in the address data. Abnormal data output due to the abnormal operation of the DDR memory or a short circuit on the board, which may be caused during the ass'y process, causes the screen to be abnormally displayed. Therefore, you have to conduct a short test for each part.

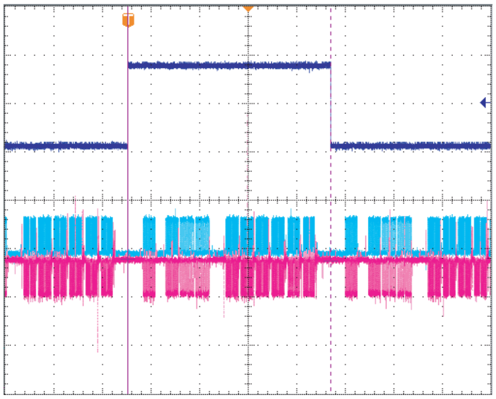
▶ If the Vref voltage (Voltage Divider Voltage) is lower than 1.25V, check the resistance of the resistance output part and check if the circuit status is normal. This applies the voltage and the proper Vref voltage and results in the screen being properly displayed.

▶ If the screen is abnormally displayed, even though the Vref voltage is normal, find any abnormal points by conducting a short test. If a short circuit is found and it is repairable, repair it. If a short circuit is internal, replace the board.

▶ The following waveform appears when the V-sync and address data are output properly.



< Normal V-SYNC Output Waveform >



< Normal Address Data Output Waveform >

2. X, Y Control Block

■ Drive Circuit Definition

The Drive Circuit is a circuit that generates a waveform (high-voltage pulse) for the X and Y electrode group of the panel's external port so as to control the panel. The high-voltage switching pulse is generated through the combination of the IC HYBRID (Drive block + IGBT) and FET.

■ Drive Circuit Mechanism

A picture is displayed on the PDP by applying voltage to the X, Y and ADDRESS electrodes of each pixel according to the appropriate condition. The drive waveform applied to 42HD V4 is of the ISSS (ISSS: Interweaving Scan and Selective Sustain with Scan IC) type and has IDS (InDependent Sustain) in the Scan section unlike the existing ADS. Discharges within a PDP pixel can be classified into 3 types:

① Address Discharge: To form a wall voltage within the pixel by giving information (applying DATA voltage) to the pixel to be lit.

② Sustain Discharge: Sustain Discharge is a display section that voluntarily maintains the discharge of the pixels whose wall voltage has been formed by the Address Discharge. (Optical output for displaying a picture is generated).

③ Erase Discharge: To selectively perform Address Discharge for each pixel, all pixels on the panel should be in the same status (the wall electric charge status and space electric charge status must be the same). Therefore, the Erase Discharge section is an important component for guaranteeing the drive margin, and is implemented by various methods such as applying a log waveform. However, the current 42HD V4 has adopted a wall voltage control through an RA (Repeated Auto-quenching) reset that separates the discharge area and performs switching to perform an efficient erase operation, while the gradient was the same in the RAMP section in the existing approach.

1) Address Discharge

A discharge that is caused by the difference between the plus electric potential (Va apply voltage of 65~70V + Positive Wall Charge) of the electrode and the negative electric potential (Applied GND Level + Negative Wall Charge) of the Y electrode. The Address discharge forms a wall voltage within the pixel to display color (to be discharged) before the Sustain Discharge period. That is, the pixel whose wall charge has been formed by the Address Discharge forms a Sustain Discharge vis the following Sustain pulse.

2) Sustain Discharge

A Sustain Discharge is a Self-Sustaining Discharge formed by the accumulation of the electric potential of the Sustain pulse (generally 200 ~ 210 Volt) alternating over the X and Y electrodes during the sustain period, and the wall charge depending on whether the pixel has previously been discharged or not. That is, it is controlled by the memory characteristics, one of the basic characteristics of the AC PDP (in that the past operating conditions determine the current status). That is, if a wall voltage exists on the pixel (if the pixel is on), a discharge is formed again because the applied voltage, which is the sum of the following applied Sustain voltage and the wall voltage, is higher than the discharge threshold voltage. If no wall voltage exists on the pixel (if the pixel is off), a discharge will not occur because the Sustain voltage is not higher than the discharge threshold voltage. The Sustain Discharge period is the period for generating actual optical output so as to display a picture on the PDP screen.

3) Erase Discharge

The purpose of a Reset (Erase) Discharge is to create uniformity of the wall voltage within all panel pixels. It evens the wall voltages regardless of the Sustain Discharge in the previous stage. The Erase Discharge has to remove the wall voltage introduced by the Sustain Discharge by supplying ions or electrons by a discharge. When the wall voltage is removed through a discharge, the time when the reverse polarity is applied to the wall voltage (fine width erasing) is to be limited or ions or electrons are to be supplied by a weak discharge (low voltage erasing) so as to prevent a wall charge in reverse polarity.

There are 2 known weak discharge (low-voltage) erase methods. 1) A log waveform adopted by F company and 2) a weak erase discharge via a ramp waveform adopted by Matsushita and other companies. Both methods control the externally applied voltage by the difference of the wall voltage of the pixel by applying the rising gradient of the erasing waveform slowly, because the discharge begins when the sum of the existing remaining wall voltage and the rising waveform voltage exceeds the drive threshold voltage. In addition, a weak discharge is introduced, because the applied voltage is low.

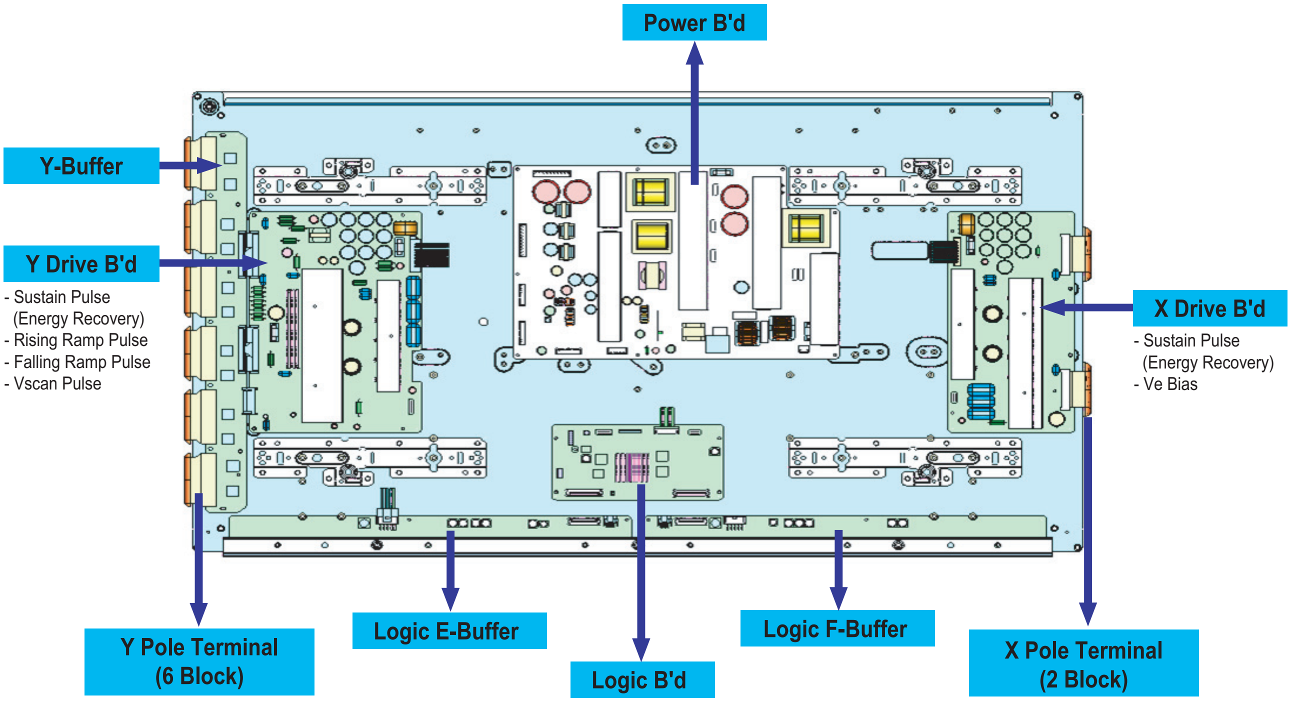
■ Requisite Components Necessary for Drive Board Operation

1) Power
- Supplied from the power board. The optimal value may differ from the following:
  - a) Vs : 200V - Sustain
  - b) Vset : 190V - Y Rising Ramp
  - c) Ve : 110V - Ve bias
  - d) Vscan : -190V - Scan low bias
  - e) Vsc_h : -70V - Scan high bias (Created by the DC-DC power block of the Y Drive board)
  - f) Vdd : 5V - Logic signal buffer IC
  - g) Vcc : 15V - Gate drive IC

2) Logic Signal
- Supplied by the Logic board
- Gate signal of each switch

■ Drive Circuit Architecture and Function Description

- Description of the function of each board


Power B'd
Y-Buffer
Y Drive B'd
- Sustain Pulse
(Energy Recovery)
- Rising Ramp Pulse
- Falling Ramp Pulse
- Vscan Pulse
X Drive B'd
- Sustain Pulse
(Energy Recovery)
- Ve Bias
Y Pole Terminal
(6 Block)
Logic E-Buffer
Logic B'd
Logic F-Buffer
X Pole Terminal
(2 Block)

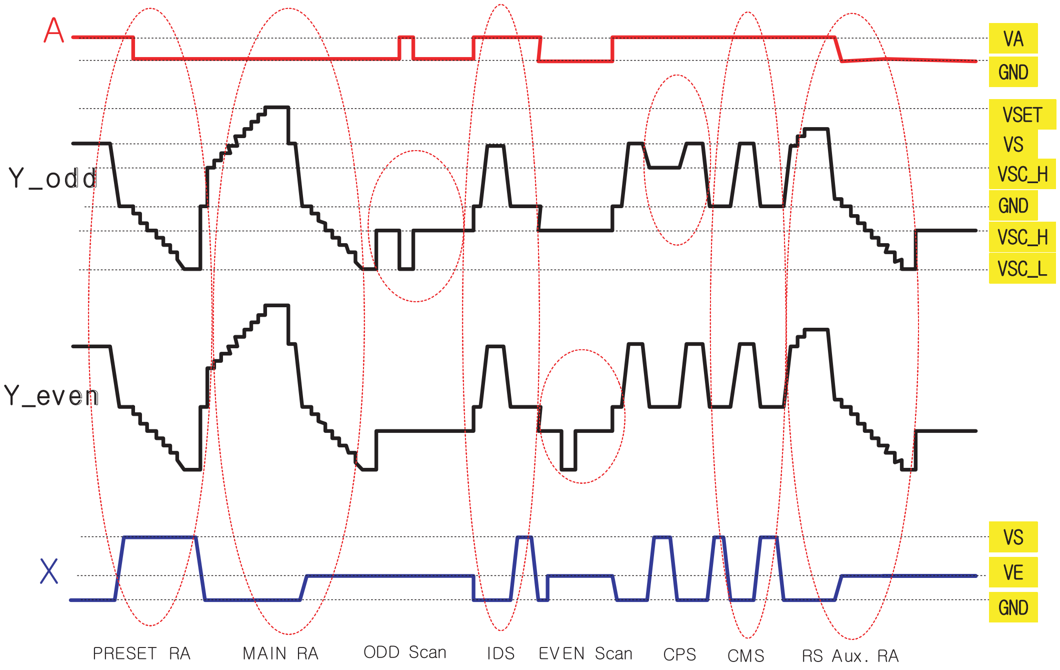
1) X Drive Board
This is connected to the X port part of the panel. 1) Sustain voltage waveform (including ERC) is output, and 2) Ve bias in the Scan section is maintained.

2) Y Drive Board
This is connected to the Y port part of the panel. It outputs 1) Sustain voltage wave form (including ERC), and 2) Y Rising, Falling Ramp waveform, and maintains 3) Vscan bias.

3) Y Buffer Board
A board, which applies the Scan waveform to the Y terminal block, consists of 12 Scan Driver ICs (TI SN755870: 64 Outputs).

■ Drive Waveform Specifications

- Drive Waveform



- Description of the function of each pulse

1) Y Preset RA Pulse
This is supplied to the first sub-field and erases the discharge status of the previous subfield.

2) Y Main RA Pulse
During the Y Rising Ramp section, approximately 300V~350V (Vscan-h + Vset) of external voltage is supplied to the Y electrode, and a weak discharge is started when each gap voltage is equal to the discharge start voltage. While maintaining the weak discharge, as a whole, negative wall charges are accumulated on the Y electrode and positive wall charges on the X electrode and the address electrode.
During the Y Falling Ramp section, the negative wall charges accumulated on the Y electrode by the approximately 105V of X bias are used to erase the positive wall charges on the X electrode, and the address electrode maintains most of the positive wall charges accumulated during the (0V) Rising Ramp section preparing for the next address discharge.

3) Y Scan Pulse (Odd/Even)
A scan pulse classifies the Y electrode into Odd and Even lines and selects FPC output electrodes sequentially (one line-at-a-time). At this time, Vscan is called the Scan Bias Voltage.
A Vscan voltage of approximately -175 Volt (Vsc_1) is supplied to the electrode lines. For the other lines, -56 volt (Vsc_h is higher than Vscan-l by 120V) is supplied. However, negative wall charges are accumulated on the Y electrode by the Ramp pulse, and positive wall charges are accumulated on the address electrode, and the voltage applied to the cells, to which the Address pulse (70V~75V) has been applied, becomes higher than the discharge voltage. An address Discharge occurs as a result. Since the Scan and Data pulse is applied one line at a time as above, the address time of PDP is very long.

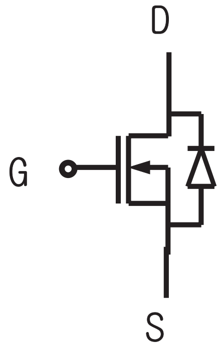
4) IDS Pulse (InDependent Sustain Pulse)
Since an Odd Scan is performed first, the Odd line output sustains optical twice during the IDS section. At this time, a Sustain Discharge does not occur for the Even line because the Even line is not scanned.

5) CPS Pulse (ComPare Sustain Pulse)
By floating the Odd line that caused the Sustain Discharge in the IDS section to the Vscan-h level, and introducing the Sustain Discharge only for Even lines, it compensates for the optical output difference between the Even and Odd lines.

6) CMS Pulse (ComMon Sustain Pulse)
Actual optical is output during the common Sustain Discharge section.

■ Mechanism of the FET Operation and High-Voltage Switching

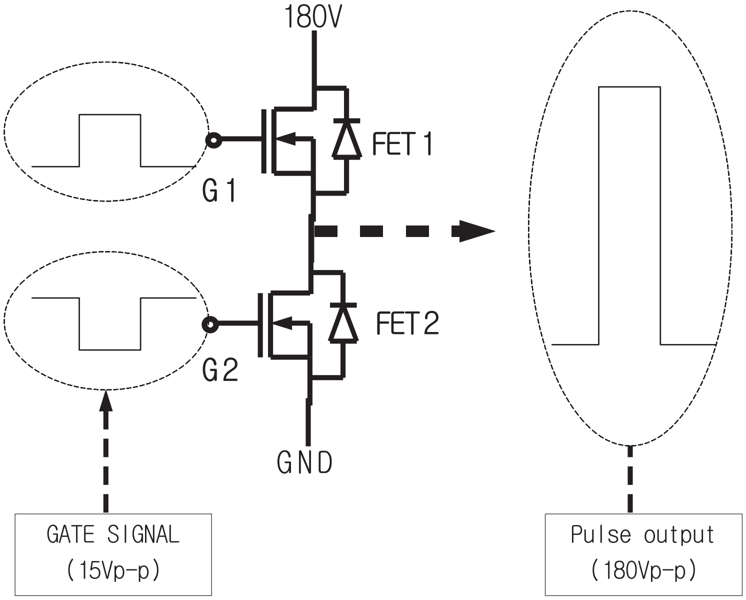
Mechanism of the FET Operation



G : Gate
S : Source
D : Drain

1) When the signal is output to the gate, (positive electric potential) FET short circuits (i.e. Conductor of resistance 0)
2) When no signal is output to the gate (GND), FET changes to an open circuit (i.e. an insulator of resistance ∞).

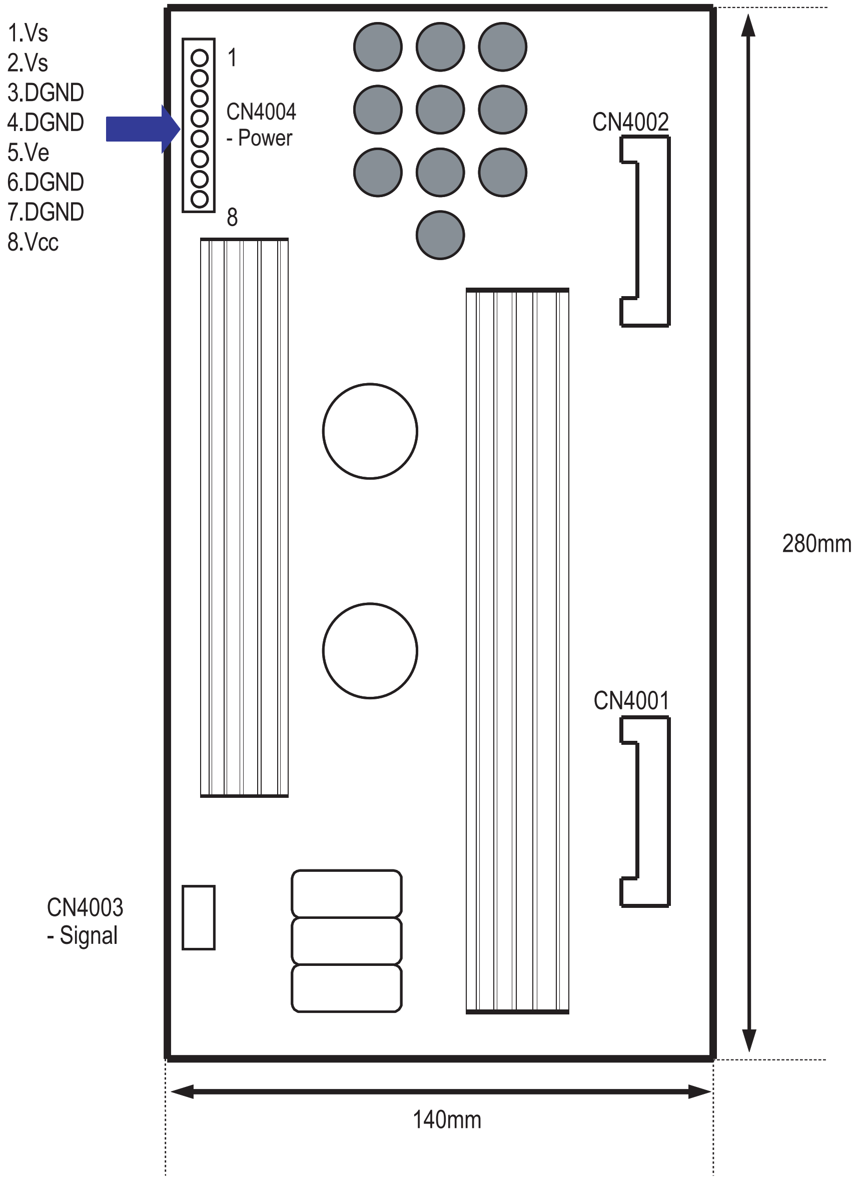
High-Voltage Switching of the FET Operation



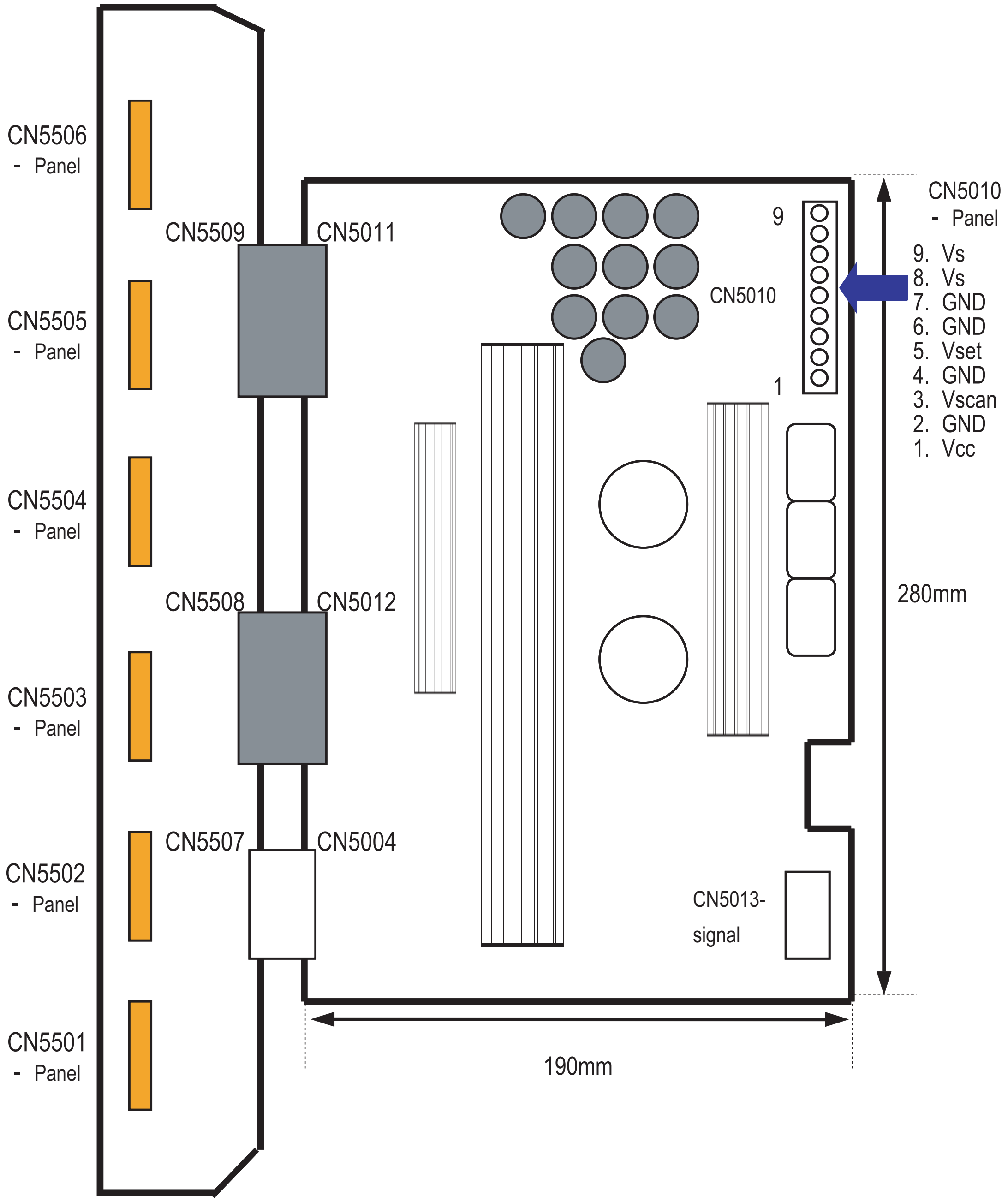
1) When no signal is applied to G1, FET1 is opened and when the signal is applied to G2, FET2 short circuits, GND is output via the output terminal.
2) When a signal is applied to G1, FET1 short cir cuits and when no signal is applied to G2, FET2 is opened, and 180V is output via the output terminal.

■ Drive Board Connector Layout

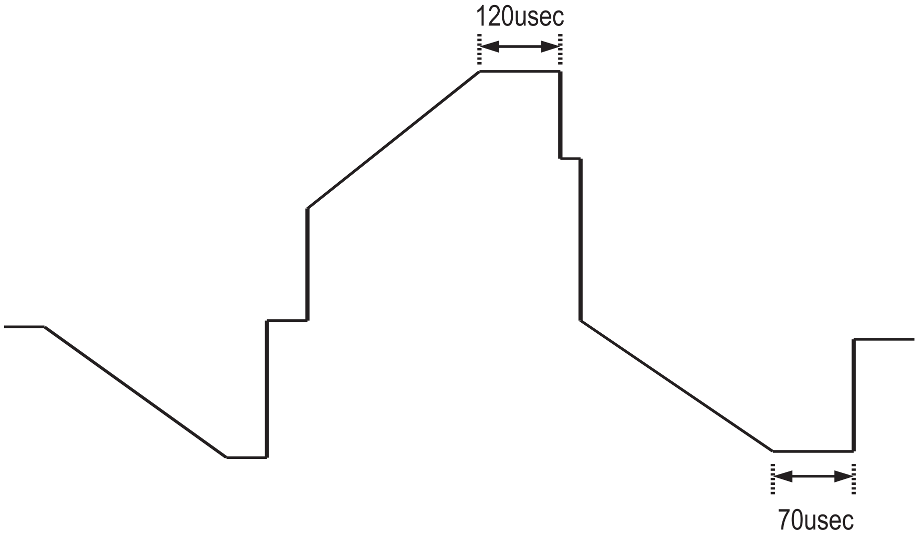
1) X-Main Board

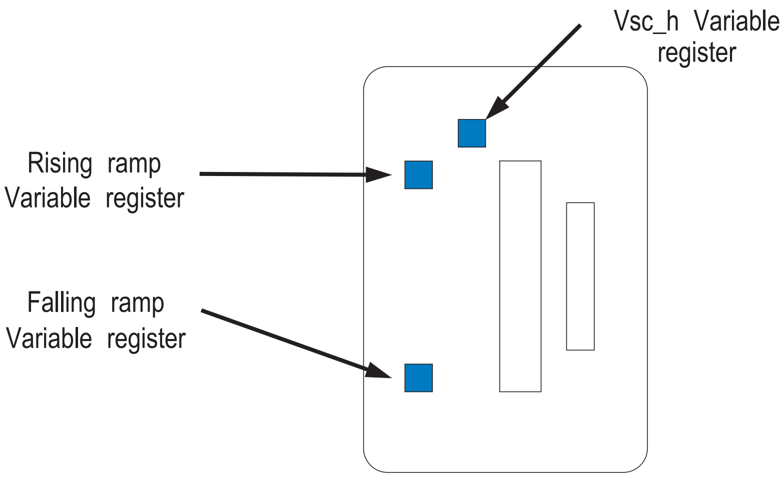

1.Vs
2.Vs
3.DGND
4.DGND
5.Ve
6.DGND
7.DGND
8.Vcc
1
CN4004
- Power
8
CN4002
280mm
CN4001
CN4003
- Signal
140mm

2) Y-Main Board


CN5506
- Panel
CN5505
- Panel
CN5504
- Panel
CN5503
- Panel
CN5502
- Panel
CN5501
- Panel
CN5509
CN5011
CN5508
CN5012
CN5507
CN5004
9
1
CN5010
CN5010
- Panel
9. Vs
8. Vs
7. GND
6. GND
5. Vset
4. GND
3. Vscan
2. GND
1. Vcc
280mm
CN5013-
signal
190mm

▶ Adjust the drive waveform so that the main reset (rising, falling:40usec) is the same as those in the F/W pattern.
(※ Attachment 1 reference)



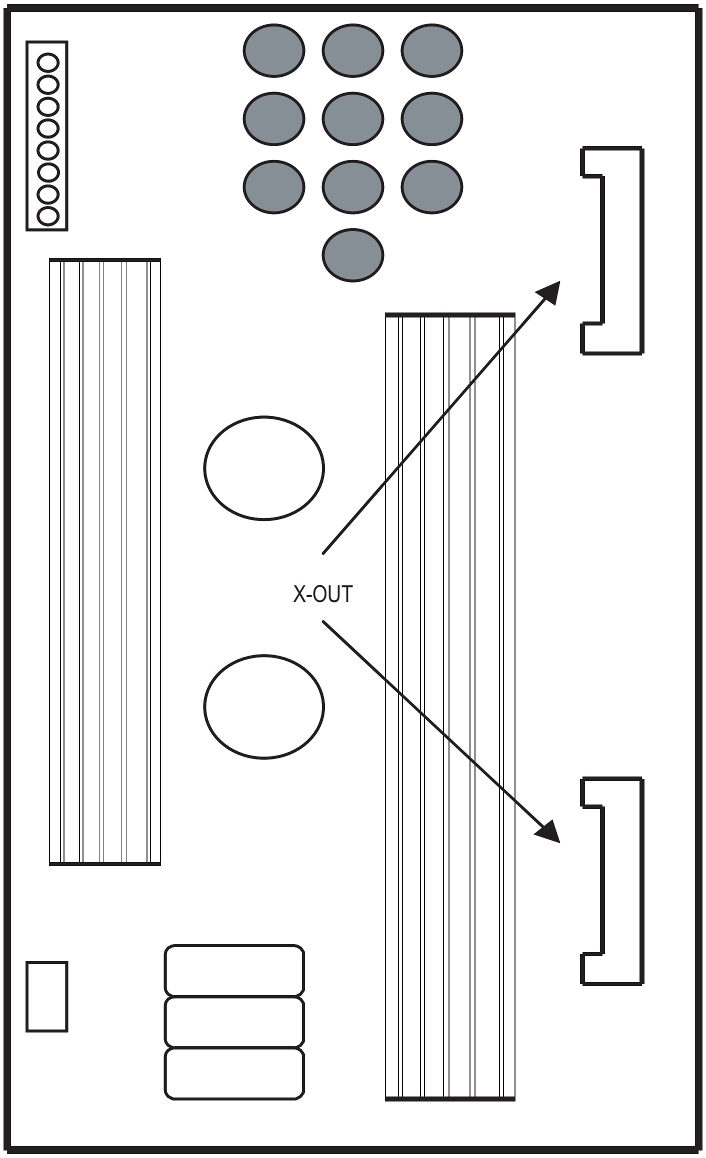

Vsc_h Variable register
Rising ramp Variable register
Falling ramp Variable register

< Y-Main >

<Voltage Adjustment Specifications>

Vset	Vs	Vsc_l	Vsc_h	Ve	Va
195V	200V	-190V	-70V	120V	65V

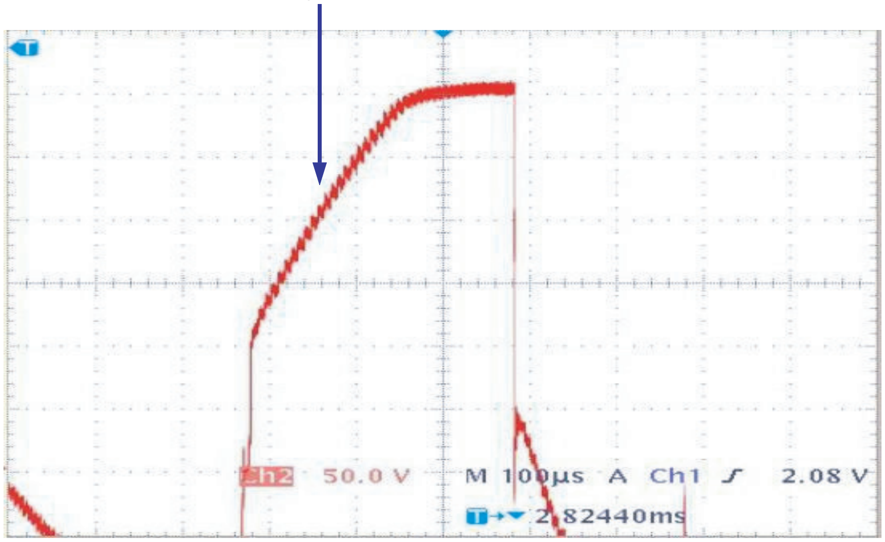
▶ Check that the output of X-Out of the X board follows the waveform of ※Attachment 2 when the power is supplied.



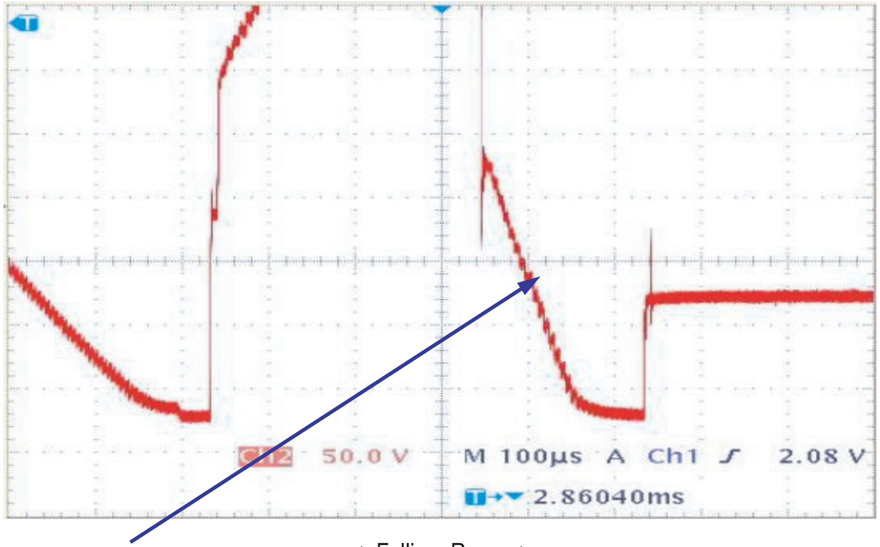
※ Attachment 1

■ Y Output Waveform

Rising Ramp

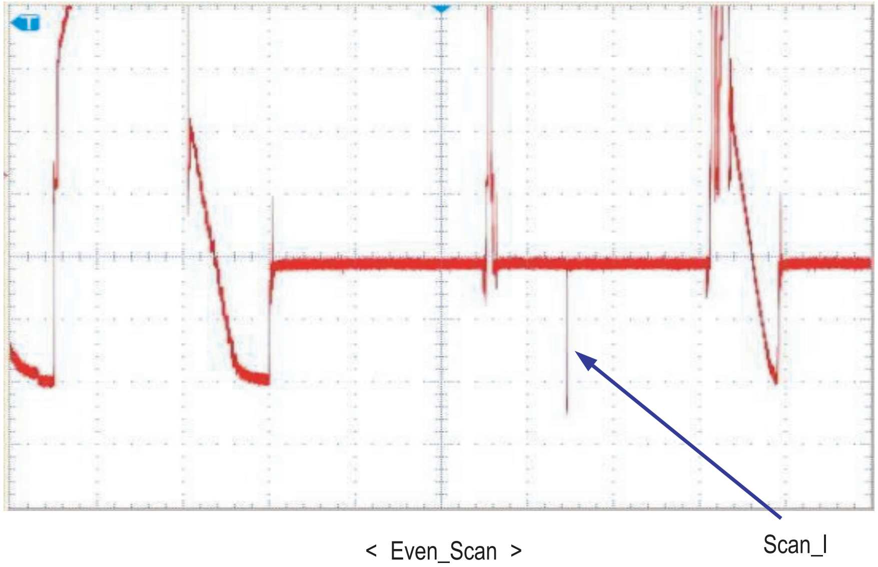


< Rising Ramp >

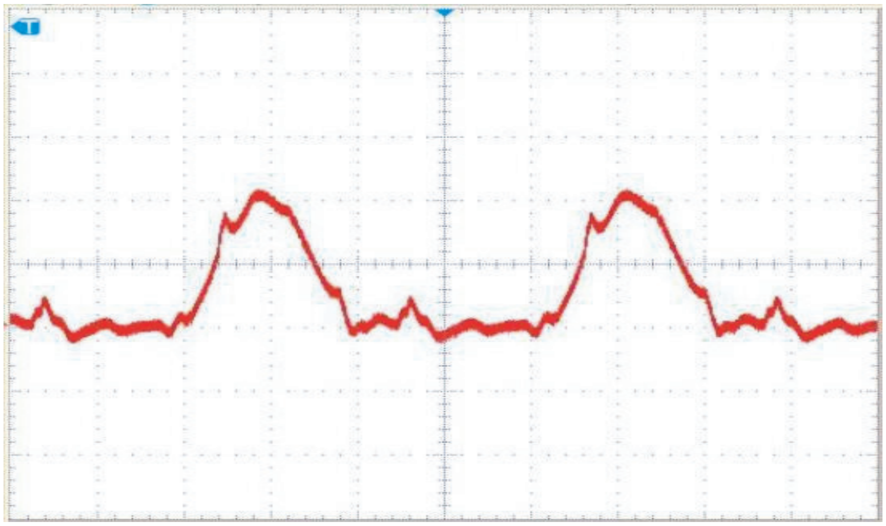


Falling Ramp

< Falling Ramp >



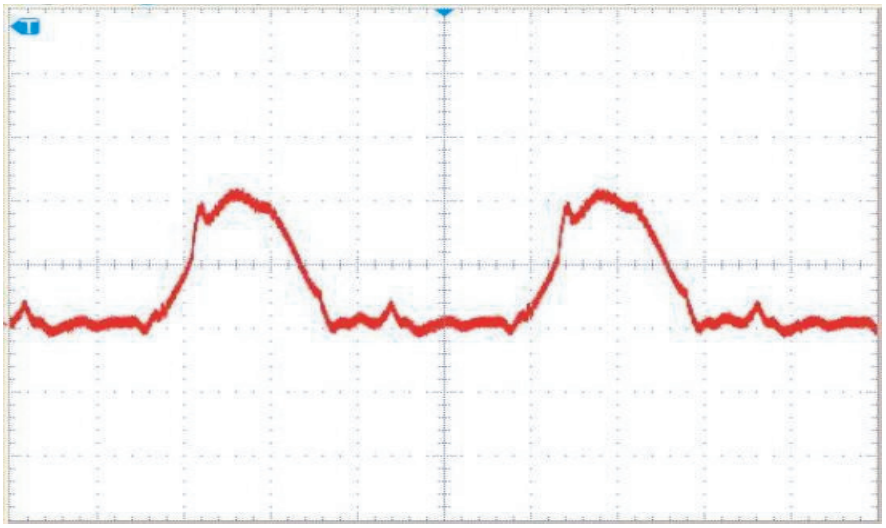
< Even_Scan >



< Y Sustain >

※ Attachment 2

■ X Output Waveform



< X Sustain >

14. Reference Information

14-1 Other issues related to other products

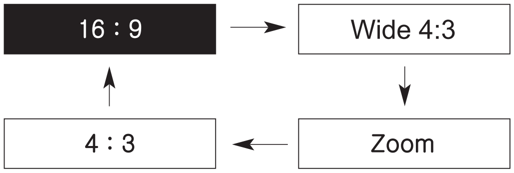
Problem	Descriptions
A fixed screen can cause permanent damage to the TV Braun tube.	Braun, PDP and LCD TVs can all be damaged. When a still image is displayed in a sequence, this can leave stains or after-images due to the characteristics of the panel. However, the DLP TV has the advantage that no stains or after-images are left on the screen. The DLP TV has mirror pixels on the DMD panel that project the beam onto the screen, in which the mirror is a digital representation of 0s and 1s, leaving no trace of light. The mirror returns to a blank state so that no stains or after-images are left.
Length of DVI Cable / PC RGB Cable	- A too long DVI cable may cause a malfunction or degradation of the visual quality due to an attenuation of the signal. There is no recommendation for the cable length at present. In general, although a cable length of up to 5 meters should work, please check if video is properly displayed on the screen after connecting. If you think the length of the cable is longer than for normal use, check the visual quality of the video on the screen and shorten the length, if necessary. - This also applies to the PC RGB (D-Sub) cable. When the length of the cable is longer than for normal use, video may not be displayed on the screen. In this case, shorten the cable length.
When a digitally distributed TV user receives HD-rated broadcasts:	The digital distributed TV (Ready Technique) can render HD sources as HD-rated. However, you need to install a set-top box for this purpose. The digital TV alone cannot render HD broadcasting as HD-rated. Install the formal set-top box for HD broadcasts.
When a digital distributed TV user selects normal size (4:3) to receive SD-rated digita broadcasts:	The digitally distributed TV (Ready Technique) renders any broadcasting service as SD-rated. However, when connected to a set-top box, the digital TV renders HD broadcasts as HD-rated and renders SD as SD-rated. The screen size is scaled to 4:3.
When a digitally built-in TV user receives SD (air) broadcasting:	The digitally integrated TV ("built-in" type) renders SD broadcasting as SD-rated. This can be understood easily. Even a high-resolution TV cannot improve a low resolution picture into high quality. In contrast, an SD-rated TV cannot represent HD broadcasting as HD because the resolution of the TV is lower than the original.
When selecting a picture size of 4:3 in connection with a computer or a multimedia device:	The representation capability of SD or HD-rated depend entirely on the TV set. The HD TV can render HD broadcasting as HD-rated only when it receives HD sources. In the meantime, the HD TV renders SD as SD-rated when it receives SD sources. The picture size has nothing to do with the resolution; TV models like SVP-XXL3HD or SVP-XXL6HD have a size adjustment feature to 16:9, 4:3, Panorama, Zoom1, Zoom2 and Auto Wide. This is about the aspect ratio of the top and bottom boundaries to the overall screen and users can select their preference.

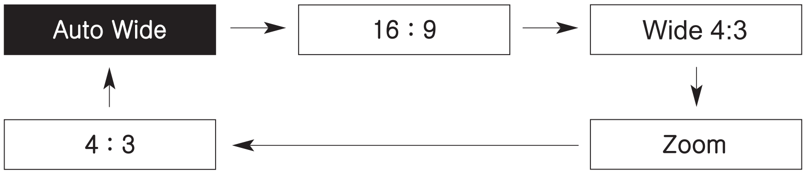
■ SD/HD broadcasts and the TV's display capability are related

1. A digital broadcast should be transmitted in wide screen (an aspect ratio of 16:9) HD. If the broadcasting station converts a conventional program created in normal screen (aspect ratio of 4:3) into a digital signal and broadcasts the signal, the left and right of the picture will not be displayed.
   This symptom also appears in other manufacturer's TV's. The three appliance companies are trying to resolve the problem through the Ministry of Information and Communication.
   * When watching an SD (normal) broadcast through a Digital (Wide) TV (480P normal broadcast)
   * When watching an SD (normal) broadcast through a Digital Ready (Wide) TV (Using a set-top-box)
   * When watching an analog (normal) broadcast through a wide TV
     (When watching a broadcast after changing the aspect ratio of the TV from 16:9 (wide screen) to 4:3)

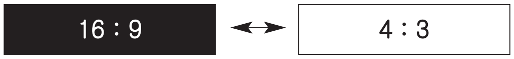
2. When watching a DVD title or video tape in wide screen (21:9) through a wide (16:9) TV, watching video from a computer or game console by selecting the aspect ratio to 4:3, or watching video from a DVD, VCR, computer or game console through a wide TV by selecting the aspect ratio to normal (4:3) or wide (21:9), the left and right, or top and bottom of the picture will not be displayed.
   This symptom appears in other manufacturer's TV's. The three appliance companies are trying to resolve the problem through the Ministry of Information and Communication.

■ Changing the Order of the Picture Size for 16:9 Display Devices





■ Changing the Order of the Picture Size for DTV 1080i/720p Sources



■ Restrictions

1. When you want to change the picture size in PIP 'ON', you must turn the PIP off before changing the size.
   However, you can change the main picture size even in PIP ON for products with no restrictions.

2. When the picture size is not Normal (4:3 for 4:3 display devices, 16:9 for 16:9 display devices) and you turn PIP on, the picture size is changed to Normal.
   However, you can turn PIP on without changing the picture size for products with no restrictions.

3. In the OSD notation for the picture size, 16:9 is represented as "Wide" instead of "16:9" for devices other than with 16:9 dis plays.
   Ex: For LCD 15:9 devices, "Wide" is displayed on the OSD instead of "16:9".

4. The picture size can be changed even in the blue screen.
   However, the picture size should be controlled by the product specifications if the change is impossible due to hardware restrictions.

14-2 Technical Terms

Virtual Channel
In digital channels, a virtual channel is used. A virtual channel is a function that enables users to watch a channel by selecting a virtual channel number regardless of the region of the user. Run Auto Channel Scan for digital broadcasts, tune in to a UHF channel number according to the region for terrestrial broadcasts, or tune into a channel number allocated by the cable broadcasting station for a cable TV network, and then select a displayed virtual channel.
For example, even if you tune into channels UHF 14(MBC), 15(KBS1), 16(SBS), 17(KBS2) and 18(EBS) broadcast from Kwanak mountain in Seoul, you can watch the channels using virtual channels such as 11-1(MBC), 9-1(KBS1), 6-1(SBS), 7-1(KBS2) and 10-1(EBS) regardless of your region and the actual local channel number. The virtual channel numbers may be used nationwide, but the virtual channel numbers may vary depending on the local broadcasting stations.
(Since the digital channel numbers may vary depending on your region and can be changed by the broadcasting policy, ask your local broadcasting station or regional cable TV network company about the channel numbers.) If the virtual channel numbers are saved and the TV set can receive digital broadcasting, you can watch a digital channel by pressing the DTV+ button and pressing the first two digits of the corresponding virtual channel number.

Custom Color Adjustment
Using this function, a user can adjust the color according to personal preferences (Red, Grass-Color, Sky-Color, Gold-Color, Skin-Color, White, Standard, Custom) without affecting other colors using automatic selection mode or fine adjustment mode.

Simultaneous Screen
Using this function, a user can view two video signals from separate video sources on a single screen at the same time. For example, you can watch TV and video simultaneously.

Dolby Digital
This is the digital sound standard developed by the Dolby Laboratory. You can select your preferred digital surround mode after connecting external speakers.

Digital Broadcasting
Digital Broadcasting is a television broadcasting signal digitized and transmitted according to the United States' terrestrial digital broadcast standard, or ATSC.

Mono
A type of audio interface that transmits the audio signal through a single channel only.
Through a mono interface, it is hard to experience stereophonic sound and the sound is played using only one speaker.

Reception Sensitivity Amplification (LNA)
A signal amplification technique that amplifies a weak broadcasting signal by applying satellite technology to provide better visual quality even for users in regions where only a weak broadcasting signal is available. (LNA: Low Noise Amplifier)

Sub Woofer
A Sub Woofer is a speaker for ultra bass sound output only whose frequency is as low as 150Hz. There are two types: an active type which includes an amplifier, and a passive type, which requires an additional amplifier.

Stereo
A type of audio interface that transmits audio signal through 2 channels.
Stereo transmits audio signals for right and left sound so that you can experience stereophonic sound, and the sound is played through 2 speakers.

Partial Color Blind Person Mode
Using this function, a user can adjust the red, green or blue colors according to the preferences of the partially color-blind person so that he or she can view the clearest possible picture on the screen.

Analog Broadcasting
Analog Broadcasting is a television broadcasting signal transmitted according to the NTSC standard.

ANTENNA IN Port
The port connecting the TV aerial via a coaxial cable. It is generally used for watching public broadcast programs.

English Caption
A function that displays English captions or text information included in the broadcast signal or video tape. You can use this function for your English studies by watching AFKN or CC marked video tapes.

Video/Audio Ports
You may experience poor visual and audio quality when watching a video tape on channel 3 or 4 through the antenna cable. You can experience better visual and audio quality by connecting the TV and VCR through the Video/Audio ports. The video port is in yellow, and the audio ports are in white and red.

Wide Screen
Wide Screen refers to a screen that is horizontally longer than a conventional TV screen.
While the aspect ratio of a normal TV is 4：3, that of a wide screen is 16：9.

External Input
External Input is a connected video device such as a VCR, camcorder, DTV receiver, DVD, etc. as a video source.

Satellite Broadcasting
Satellite Broadcasting transmits programs via satellite so that a program can be viable in all areas at a high visual and sound quality. Approximately 100 channels including public broadcast channels are provided. To view a satellite broadcast, you have to install an additional receiver.

Wire Broadcasting
Wire Broadcasting refers to movie, entertainment and educational programs transmitted by a broadcasting station within a hotel or school.

Audio Multimix
Audio Multimix provides 2 audio languages when foreign movie, drama, news, etc. are broadcast. You can select and listen to one of the supported languages or you can select and listen to both languages simultaneously.

After-Image Protection
Using this function, a user can configure the options necessary for protecting the PDP TV screen.

Power Saving Mode
This function adjusts the screen brightness according to the ambient brightness so as to conserve power.

Component Port
The Component Port transmits a separate luminance signal as well as the green, blue, and red color signal and provides the best quality of all video connection types.

Cable Broadcasting
Cable Broadcasting transmits programs via cable instead of via the air. To view cable broadcasting, you have to subscribe to your local cable broadcast service provider and install an additional receiver.

Tuner
A device that enables the selecting of specific channel frequencies for TV or radio.

Panorama Screen
This refers to a screen that corrects the picture distortion due to a screen size mismatch on the TV.

Progressive Scan
Progressive scan displays the entire frame in a single sweep so as to provide clearer and sharper visual quality.

DVD (Digital Versatile Disc)
DVD is a large capacity storage media that can store multimedia content such as video, games, audio applications, etc. using MPEG-2 video compression technology on a CD sized disc

DRC
This is a sound quality enhancement function that automatically controls audio output so as to prevent sound quality distortion even at loud volumes and correct the sound to the speakers so that you can listen to the sound at the original sound quality.

DVI (Digital Visual Interface) Port
A DVI interface is a standard for high definition television connectivity. It provides a clear picture on the screen using TMDS which minimizes video signal loss.

DVI-D Cable
A type of DVI connector. Using this cable you can only transmit digital signals.

DVI-I Cable
A type of DVI connector. Using this cable you can transmit either digital or analog signals.

HDMI
HDMI (High-Definition Multimedia Interface) is the first industry-supported, uncompressed, all-digital audio/video interface. HDMI provides an interface between any audio/video source, such as a set-top box, DVD player, and A/V receiver and an audio and/or video monitor, such as a digital television (DTV). HDMI supports standard, enhanced, or high-definition video, plus multi-channel digital audio on a single cable. It transmits all ATSC HDTV standards and supports 8-channel digital audio, with bandwidth to spare to accommodate future enhancements and requirements.

PCM
PCM (Pulse Coded Modulation): This refers to an uncompressed digital signal. Use this for an AV amplifier that does not support 5.1 channels when connecting the audio output via optical or coaxial cable.

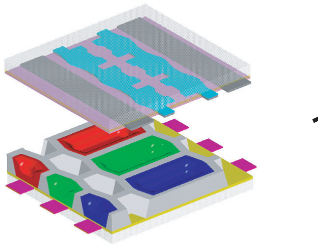
SRS TruSurround XT
This function provides 5.1 channel surround sound using 2 channel speakers when inputting a stereo audio signal.

VESA Plug & Play
This function enables the automatic recognition of devices when connecting the TV to the computer without additional settings.

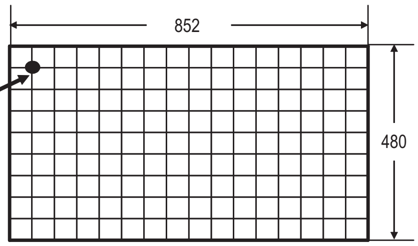
S-VIDEO IN Port
This is called super video. S-Video is a type of video signal which has the video luminance and the color signal separated in order to provide better visual quality.

VHF/UHF
VHF refers to TV channels 2 to 13, and UHF refers to TV channels 14 to 69.

Pixels, Resolution
The pixels are the number of small dots that make up the TV screen. The resolution represents the number of pixels on a screen. For example, if the resolution of a TV is 852x480, it means the width of the screen consists of 852 pixel columns and the height of the screen consists of 480 pixel rows. In this case, the total number of pixels on the screen is 408,960. The more pixels there are, the higher the visual quality that can be achieved because the picture on the screen is displayed with more pixels and therefore with more detail.

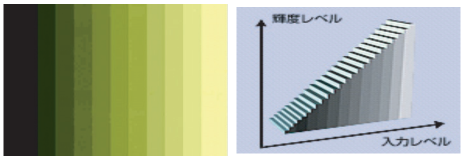


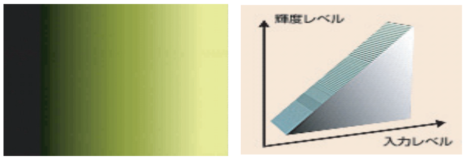
1 Pixel = 3 Sub Pixel(R+G+B)



42SD = 409K Pixels

Gradation, Color Depth
Gradation describes the number of gradual brightness levels. Since all information is represented by binary numbers in a digital system, the Gradation is determined by the number of bits used to represent the brightness levels of a pixel on the TV screen. For example, if a pixel is represented by 8 bits, the Gradation is 28 or 256. Since a TV uses the three primary colors of light, R, G and B, the number of possible colors for a pixel is 256 x 256 x 256, 16,777,216, or 16.7 million colors. If 12 bits are used for a pixel, the gradation is 212 or 4096 for a color. Since three colors R, G and B are used, 4096 x 4096 x 4096 or 68.7 billion colors are supported per pixel. Since 68.7 billion colors are far more than 16.7 million colors, the picture will be displayed by far more abundant and natural colors using a 12 bit pixel. That is, since Gradation means the number of brightness levels, color represented by 4096 levels appears more natural than color represented by 256 levels.





Contrast
The contrast is the ratio of brightness of the brightest color to the darkest color. The contrast is calculated by dividing the brightness of the brightest color by the brightness of the darkest color. For example, if the brightness of the darkest color is 1 and the brightness of the brightest color is 3000, then the Contrast is 3000/1 or 3000. A higher contrast means that a dark color is displayed darker and bright color is displayed brighter so that the screen contrast can be easily distinguished. The contrast differs from the Gradient which means the number of brightness levels.
Therefore, if someone says that a 5000:1 contrast displays a color by 5000 levels, he is confusing Contrast with Gradation.

Brightness
Brightness is the brightness per unit screen area, the unit for brightness is candela (cd). For example, 1000cd/m2 means the brightness that is measured when 1000 candles are lit within 1 square meters area.

Color Reproductivity

Each color displayed on the TV screen is implemented by a pixel on color coordinates which have an X and Y axis. For example, when a pixel on the X coordinate 0.65 and the Y coordinate 0.74 is displayed as a color and it becomes visible on the TV screen. While the possible color coordinate area is very wide, the color coordinate area of the signal broadcast from a broadcast station is smaller than that of possible color coordinates. Moreover, a TV provides a smaller color coordinate area than that of the signal from the broadcasting station even though the size of the color coordinate area varies depending on the TV model. In general, Color Reproductivity is used as follows:

The Color reproductivity of a TV is a certain % of NTSC. This means the TV displays that particular % of the color coordinate area of the NTSC signal broadcast by the broadcasting station. In general, a CRT TV provides the highest functional color reproductivity.